GLEEMAN INSTRUMENT COMPANY
97 ELDORA DRIVE • MOUNTAIN VIEW, CALIFORNIA 94041

PHONE: 415 - 964 - 1464

INTERVAL TUNING MODIFICATION - SERIES 8110 PENTAPHONIC

The interval tuning mod is a factory-installed modification to the standard or portable Pentaphonic synthesizers. It permits tuning of Oscillators 2 and 3 relative to Oscillator 1, thus providing a wealth of new sounds and effects.

The interval tuning mod is operated through the three OCTAVE switches whose labeling has not been changed. Their functions have been redesignated as follows:

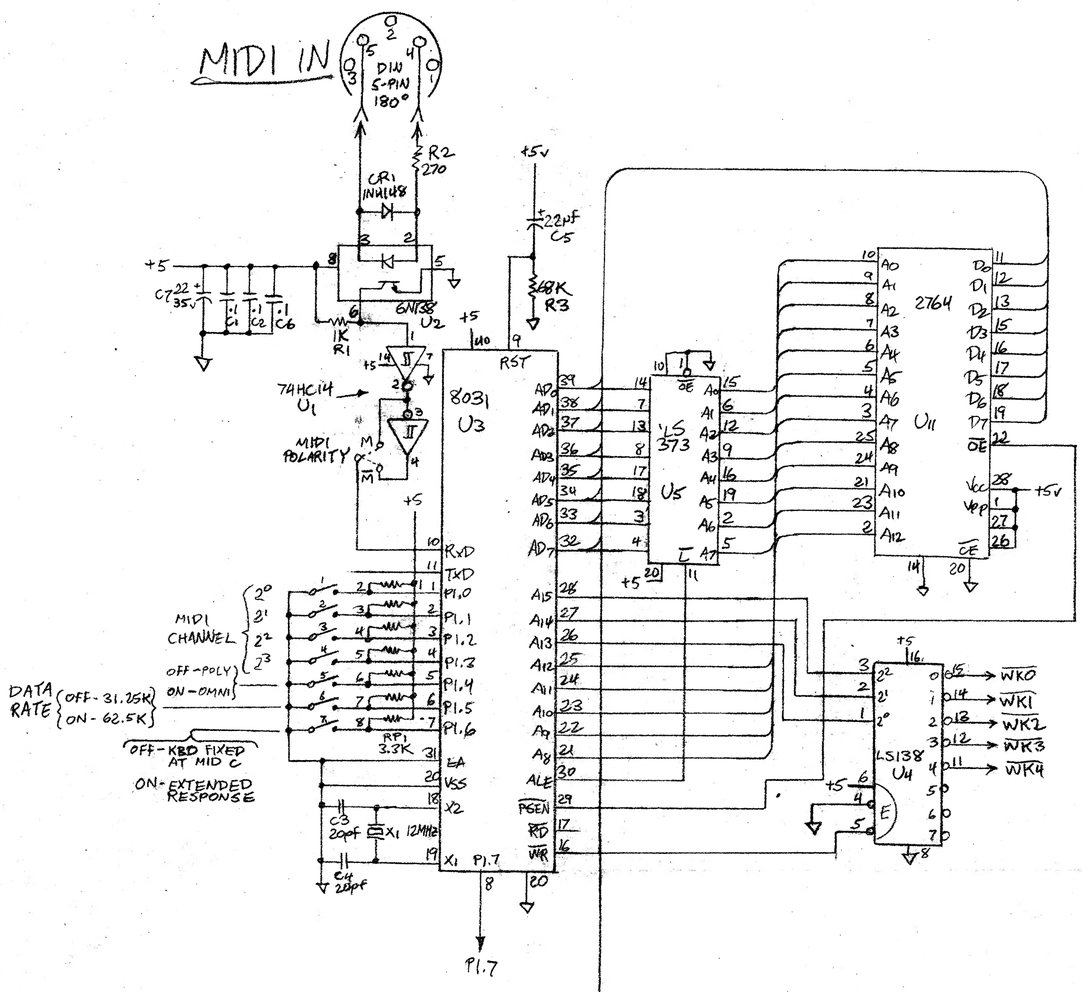
OSCILLATOR 1 OCTAVE This is now the master octave switch for the entire synthesizer. It determines the HIGH or LOW octave for all three oscillators and for both keyboard and sequencer. Its position is programmable through the Presetter.

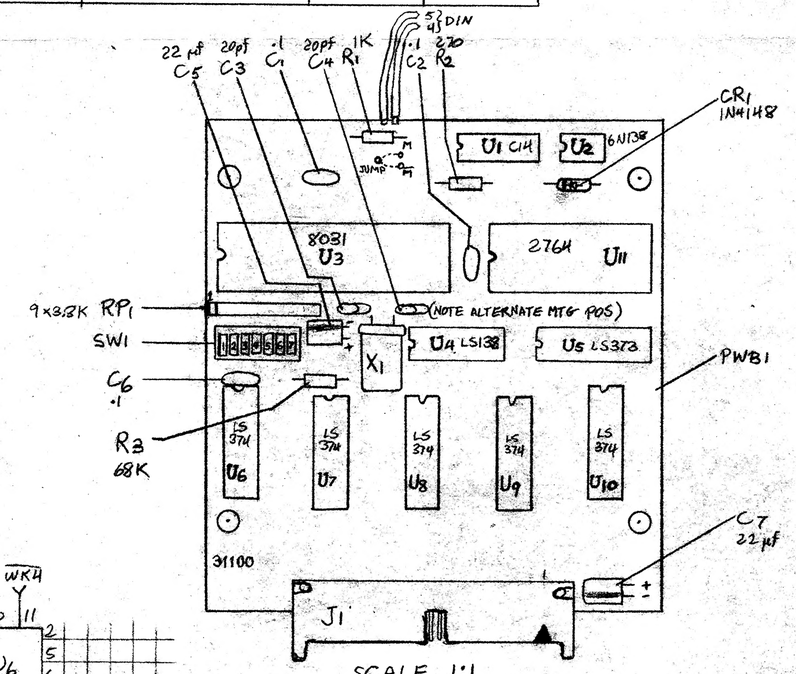
OSCILLATOR 2 OCTAVE This switch is now the tuning-enable switch for Oscillator 2. When LOW, a tuning interval is selected from the keyboard by pressing any key. The interval is measured from C2 (second C from the left) to the key pressed. Thus Oscillator 2 may be tuned relative to Oscillator 1 by any semitone interval from 1 octave below to 2 octaves above. After selection of the interval, positioning the OCTAVE switch to HIGH will allow normal play. This switch and the selected interval is not programmable through the Presetter.

OSCILLATOR 3 OCTAVE This switch is now the tuning-enable switch for Oscillator 3 and is operated exactly as for Oscillator 2.

The sequencer will retain the intervals in effect at the time the sequence was recorded and play back with the same intervals. New intervals may be selected after the sequencer is taken out of RECORD in order to set different tuning intervals for the keyboard. Thus the sound of the sequence may differ greatly from the lead line which enhances the "duet" effect.

ID	DESC	VALUE	MFG	CODE
PWB1	PRINTED WIRING BOARD	31100	GLEEMAN	1
C1, C2, C6	CAPACITOR MLC	0.1µf 50v		3
C3, C4	CAP. MYLAR or MICA	20pf 50v		2
C5, C7	CAP. ALUM ELECTR.	22µf 35v	SPRAGUE 513D226M035A W4	2
CR1	DIODE, SIGNAL	IN4148	MOTOROLA	1
J1	CONNECTOR, 40-pin IDC	3495-	3M	1
R1	RESISTOR ¼W	1K 5%		1
R2	RES. ¼W	270 5%		1
R3	RES. ¼W	68K 5%		1
RP1	RESISTOR PACK	9×3.3K 2%	DALE CSC10A01-3326	1
SW1	7-POSITION DIPSWITCH		C&K BD07	1
U1	IC 74HC14 or 74C14			1
U2	IC 6N138			1
U3	IC P8031		INTEL	1
U4	IC 74LS138			1
U5	IC 74LS373			1
U6-U10	IC 74LS374			5
U11	IC D2764		INTEL	1
X1	CRYSTAL	12.00 MHz		1

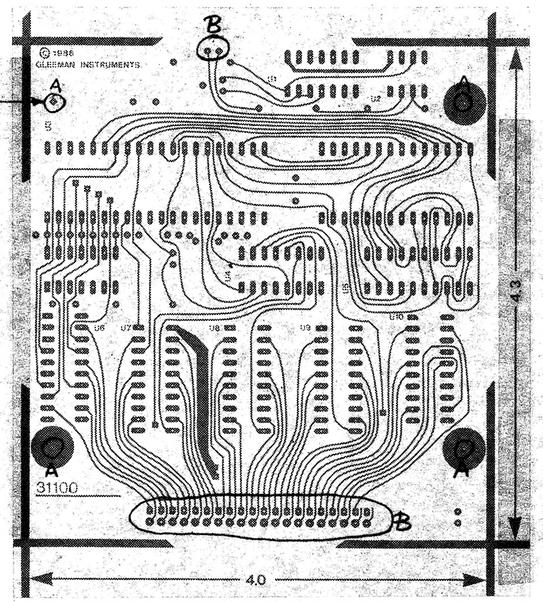




GLEEMAN INSTRUMENTS HIS-96A-146H		
MIDI INPUT		SCHEM ASSY
SCALE: NONE	DWG 31100	
BY: AH	DATE 3-16-86	

HOLE DRILLING TABLE		
CODE	SIZE ±.002	COUNT
A	.120	4
B	.035	42
NO CODE	.031 OR 1/32	287

DO NOT PLATE-THRU THIS HOLE ONLY



NOTES:

1. BOARD MATL IS .062 GLASS-EPOXY 1OZ COPPER-CLAD BOTH SIDES.
2. PLATE THRU HOLES ACCORDING TO BEST SHOP PRACTICE.
3. APPLY LEAD-TIN COATING APPROX .001 THK.
4. SOLDER MASK IS REVERSIBLE. APPLY TO BOTH SIDES.

GLEEMAN INSTRUMENTS 415-964-1464	
MIDI IN PWB FAB	
SCALE: 1:1	DWG 31150
BY:	DATE 4-7-86

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SERVICE BULLETIN

SERIAL DATA INPUT MODIFICATION

Pentaphonic 8110 Series

I. DESCRIPTION

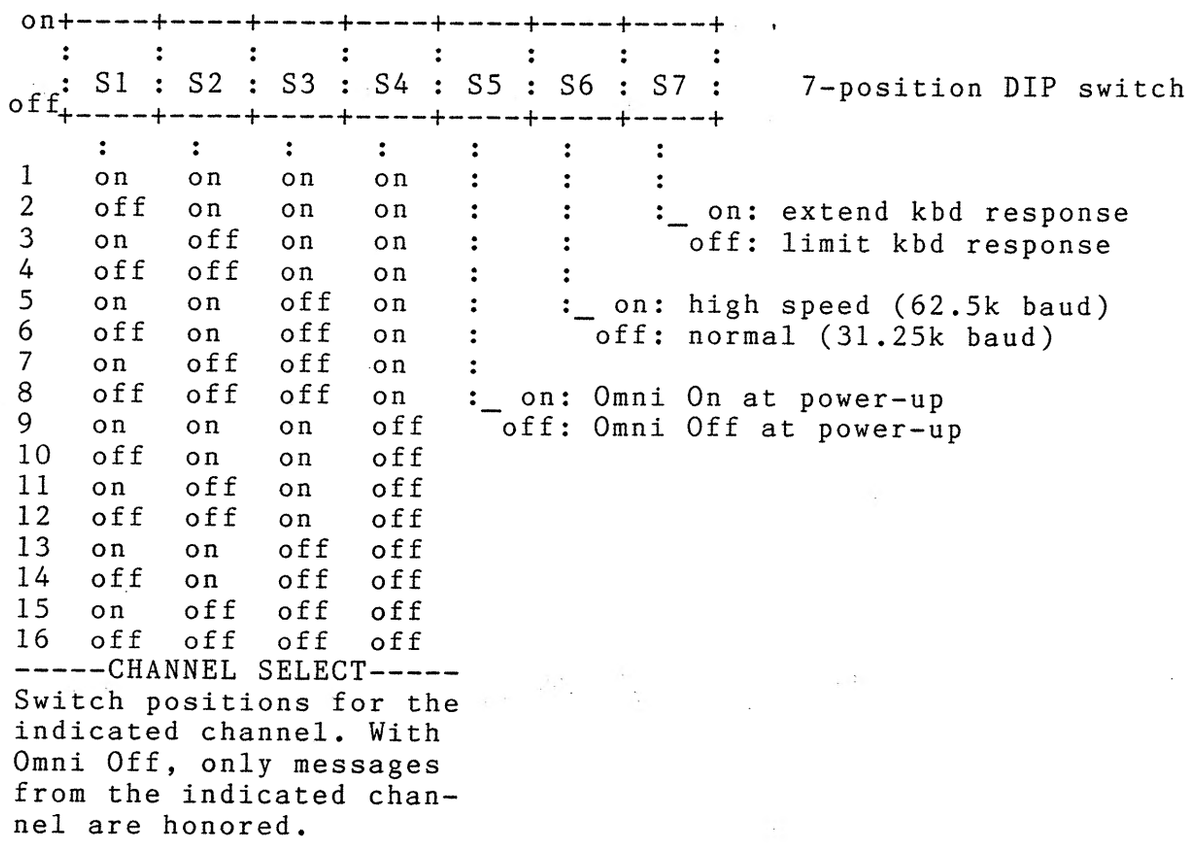
The 31100 interface modification allows the Pentaphonic synthesizer to accept MIDI-compatible serial data, which it converts to keyboard activity. The interface is receive-only and responds to note-on (1001nnnn 0kkkkkkk 01000000) and note-off (1000nnnn 0kkkkkkk 01000000) commands primarily. The only system commands it recognizes are All Notes Off (1011nnnn 01111011 00000000), Omni Off (1011nnnn 01111100 00000000), Omni On (1011nnnn 01111101 00000000), Reset (11111111), and Exclusive (11110000 00011010) which it interprets as interface self-test.

The modification consists of adding a wire to the Pentaphonic main board, drilling a number of holes in the case for the DIN connector, and attaching the 31100 circuit board and its associated cables.

The interface permits the Pentaphonic to receive in Mode 1 (Omni On Poly) or Mode 3 (Omni Off Poly). Since the serial data is applied to the Pentaphonic's keyboard circuit, anything which could be done from the keyboard manually will be available through the interface once the mod is installed. This includes Mono/Poly operation, oscillator detuning, sequencer programming, etc. Although it is possible to play the keyboard during serial input, it is not recommended as it will electrically stress the interface circuitry.

II. CONFIGURE THE INTERFACE

It is most convenient to configure the 31100 interface before installation, although it may be reconfigured any time. The 7-position DIP switch on the 31100 circuit board is used to select the Omni-off channel number, default channel mode, serial data rate, and Pentaphonic keyboard response, which when ON allows the Pentaphonic to respond to note messages outside its normal range by translating high-octave notes down and low-octave notes up by whole octave amounts. When OFF, note messages outside the Pentaphonic's range are ignored.



	S1	S2	S3	S4	S5	S6	S7
1	on	on	on	on			
2	off	on	on	on			
3	on	off	on	on			
4	off	off	on	on			
5	on	on	off	on			
6	off	on	off	on			
7	on	off	off	on			
8	off	off	off	on			
9	on	on	on	off			
10	off	on	on	off			
11	on	off	on	off			
12	off	off	on	off			
13	on	on	off	off			
14	off	on	off	off			
15	on	off	off	off			
16	off	off	off	off			

-----CHANNEL SELECT-----

Switch positions for the indicated channel. With Omni Off, only messages from the indicated channel are honored.

III. OPEN THE PENTAPHONIC

You will need at least a 24" X 30" area on your workbench or tabletop. Spread a clean terrycloth towel over the surface to protect the Pentaphonic case.

REQUIRED TOOLS

Large Philips screwdriver
Small Phillips screwdriver
Soldering iron
Electric drill
5/8" hole saw
7/64" drill bit

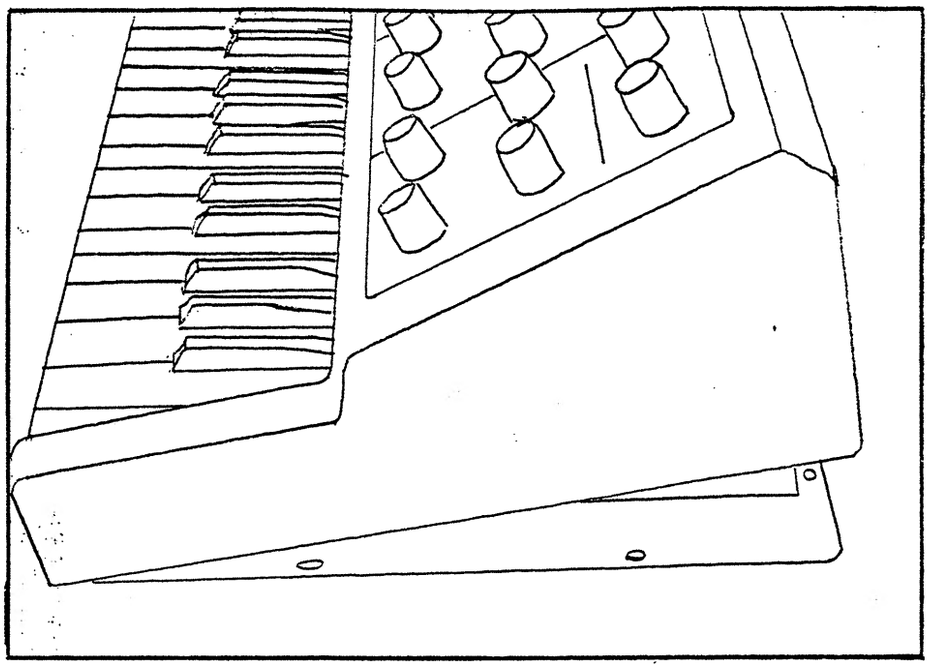
With the unit unplugged, open the Pentaphonic case by removing the ten 10-32 X 3/4 screws (8-32 in Clear models) from around the perimeter of the bottom cover. DO NOT at this time remove any of the seven 8-32 screws which are also on the bottom but located well inside the perimeter. (Fig. 1)

When all ten screws have been removed hold the top and bottom together to prevent their uncontrolled separation. Place the unit in the middle of the workspace in a normal playing position. Raise the back of the case a few inches, then slide it forward until the forward edge clears the keyboard. Raise the forward edge and lower the back until the upper assembly rests on its back.

Demate the two large 40-pin ribbon connectors at J2 and J4. Demate the 6-pin power connector J6 and the three 10-pin ribbon connectors J1, J5, and J7. If there are any additional cables installed between the upper and lower assemblies remove them at this time. Set aside the upper assembly temporarily.

Stand the lower assembly on the forward edge of the keyboard and remove the four 8-32 screws holding the keyboard to the lower assembly. Remove the keyboard and discard the old keyboard ribbon cable. Set aside the keyboard.

Remove the remaining three 8-32 screws which hold the main board to the case bottom.



Remove perimeter screws, raise back, slide forward

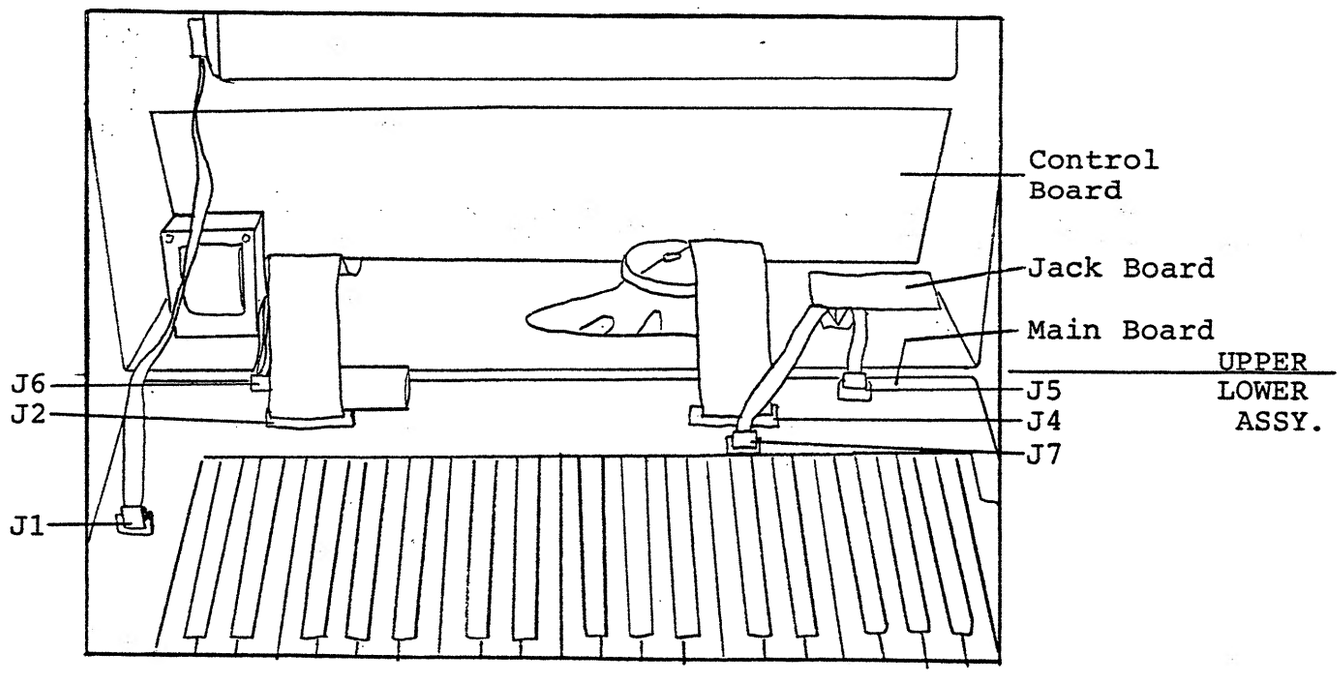


FIGURE 1

IV. INSTALL THE INTERFACE

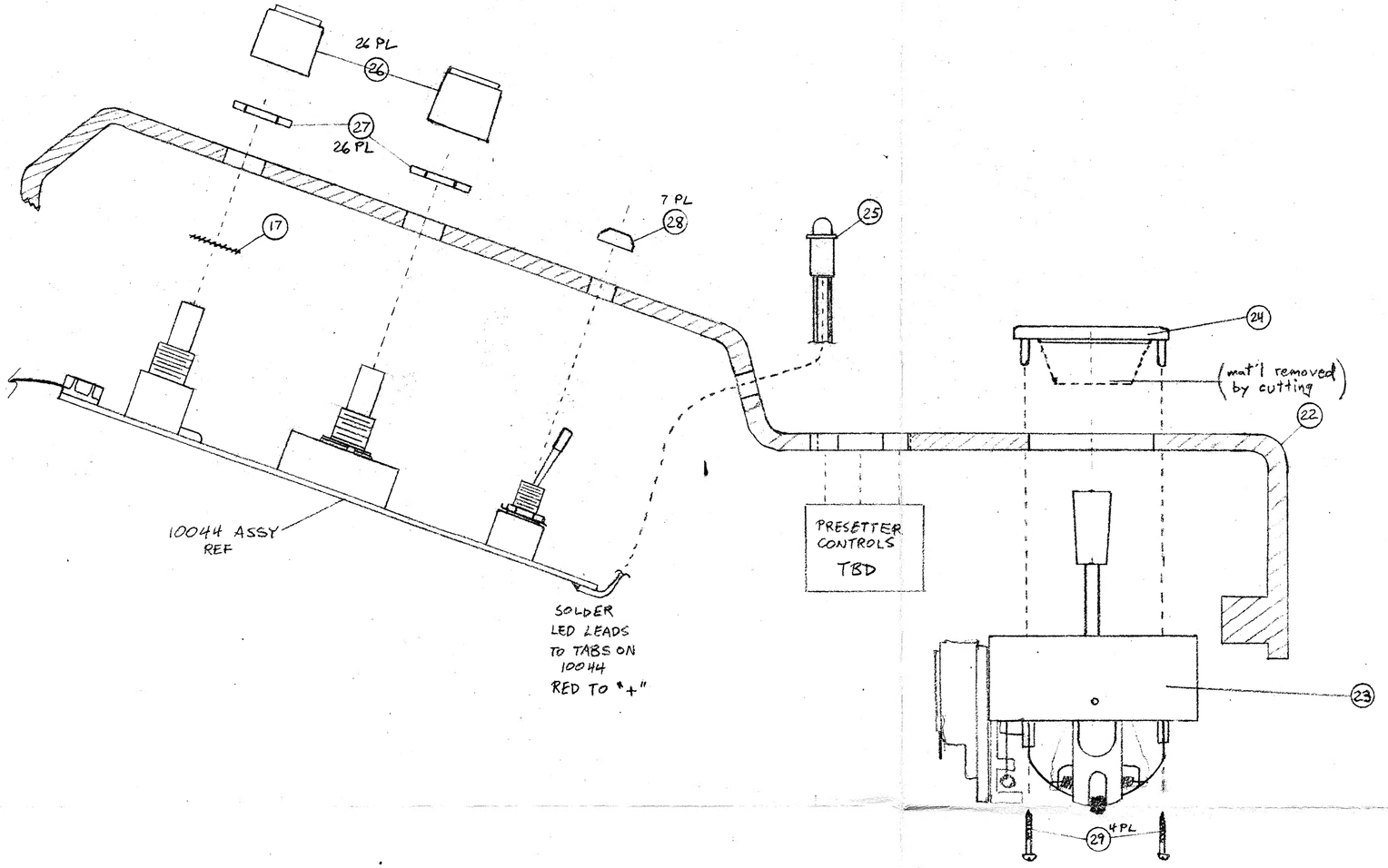
Locate the 40-pin keyboard connector J3 from the bottom (foil side) of the main board. Carefully solder a 22 gauge wire from pin 1 of this connector to the 5 volt power trace. (Fig. 2A)

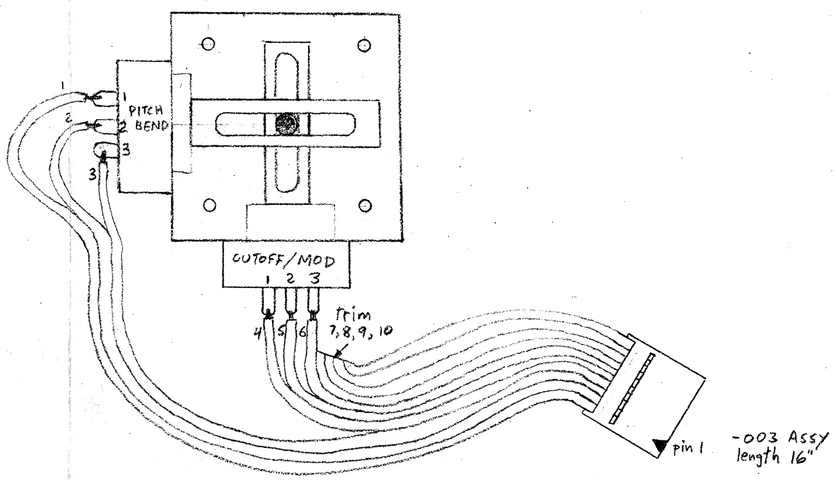
Reassemble the lower assembly. Position the main board on the case bottom and fasten using three 8-32 screws. Connect the new keyboard cable to J3, taking care to match triangles indicating pin 1. Connect the cable to the keyboard, then fasten the keyboard to the lower assembly with four 8-32 screws. Set aside the lower assembly.

Using the template provided, locate the holes for the DIN connector. This connector may be located on the back or right side of the instrument. Cut the 5/8" hole with a hole saw and drill the two 7/64" mounting holes. Fasten the DIN connector to the case using the 4-40 hardware provided.

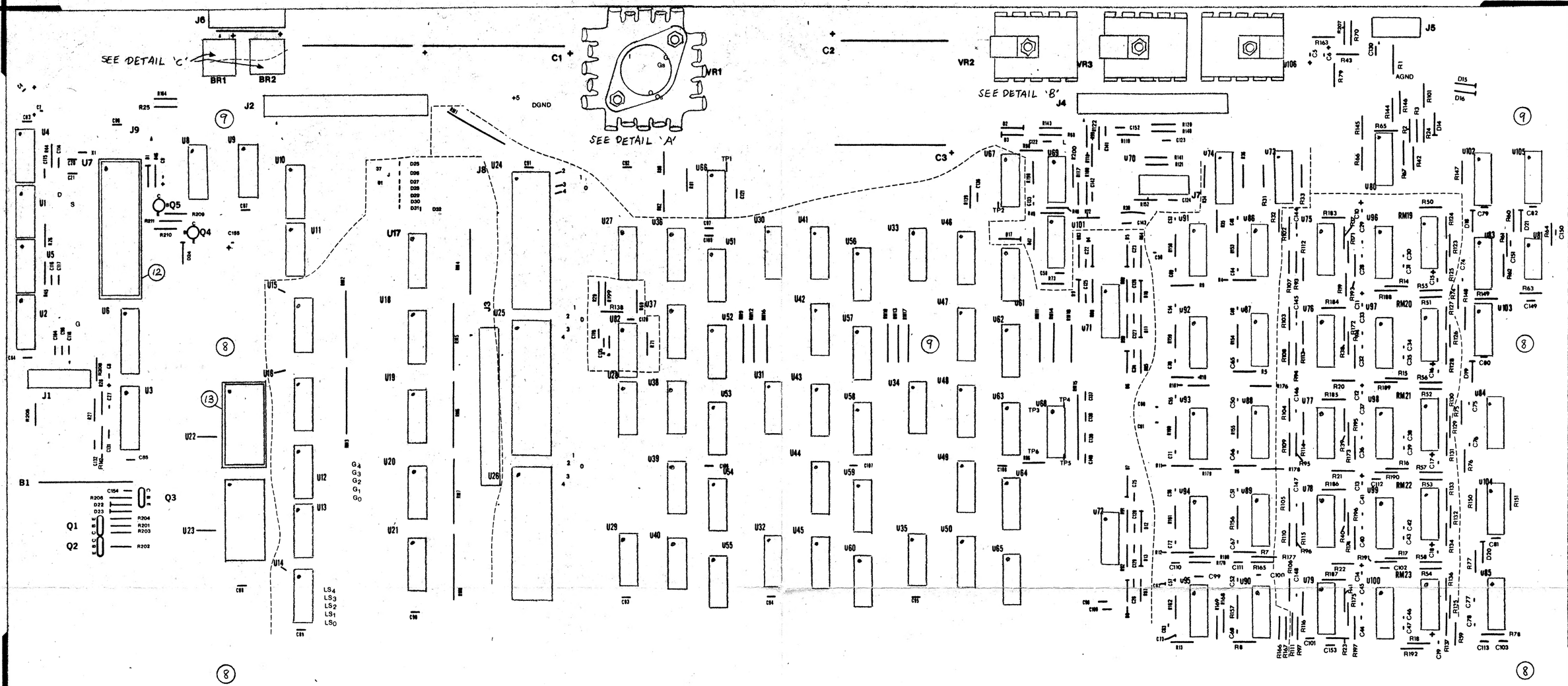
Mate the DIN cable assembly to the 31100 circuit board as shown. Now remove the paper backing from the velcro pads on the bottom of the board and press firmly against the control board in the position shown. (Fig. 2B)

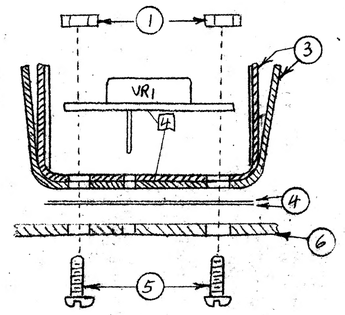
Installation of the mod is now complete.



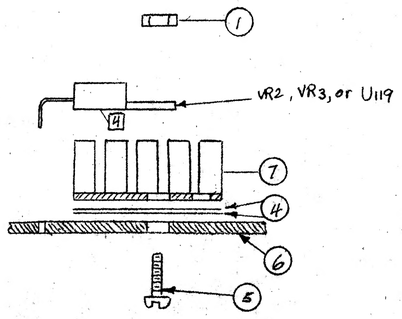


DWG: 33741B 2/3

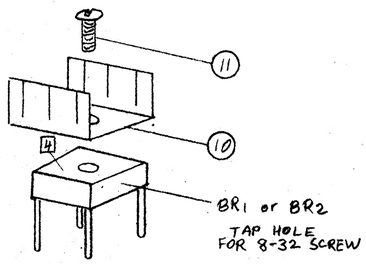




DETAIL 'A'
NO SCALE



DETAIL 'B'
NO SCALE

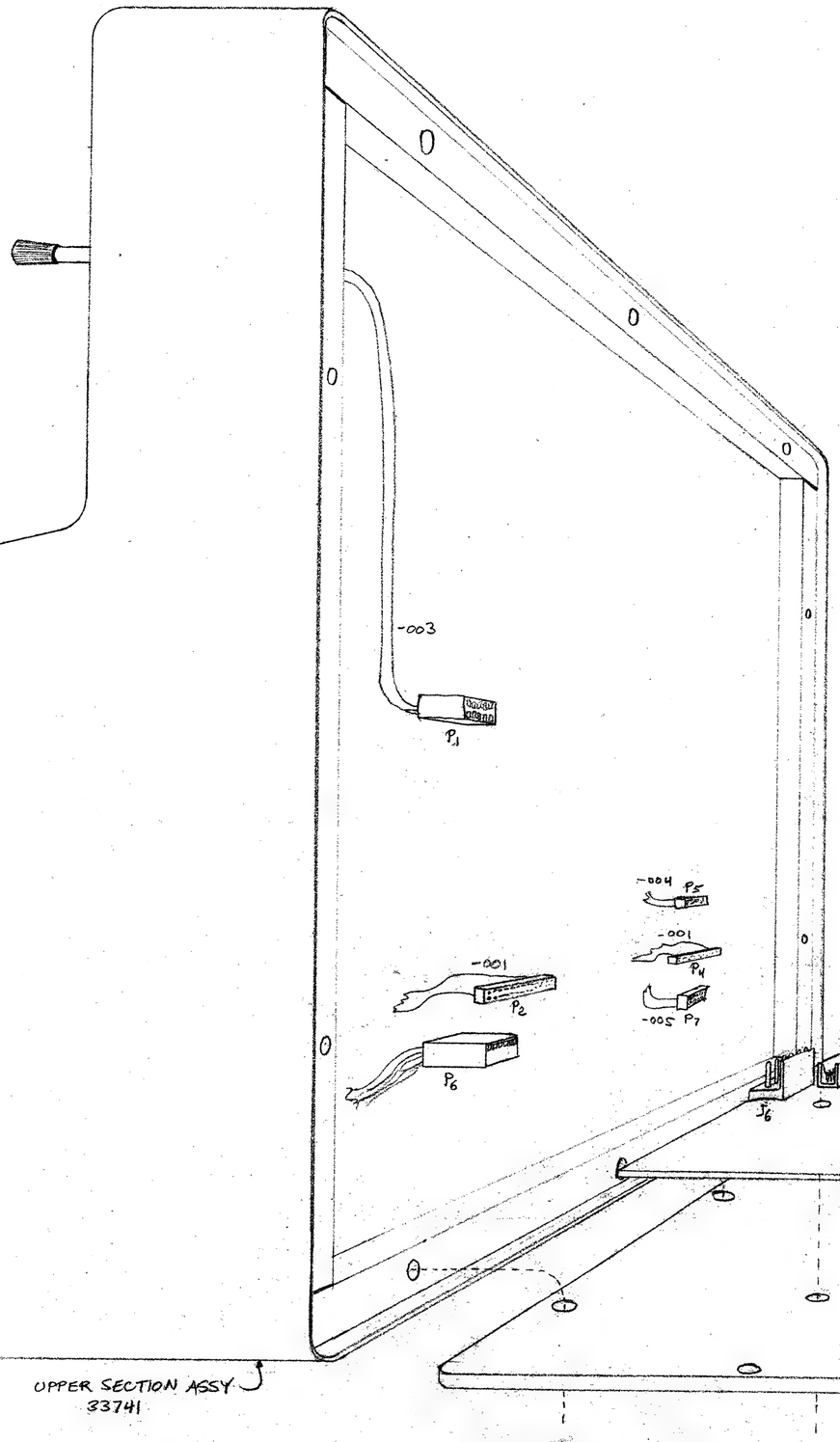


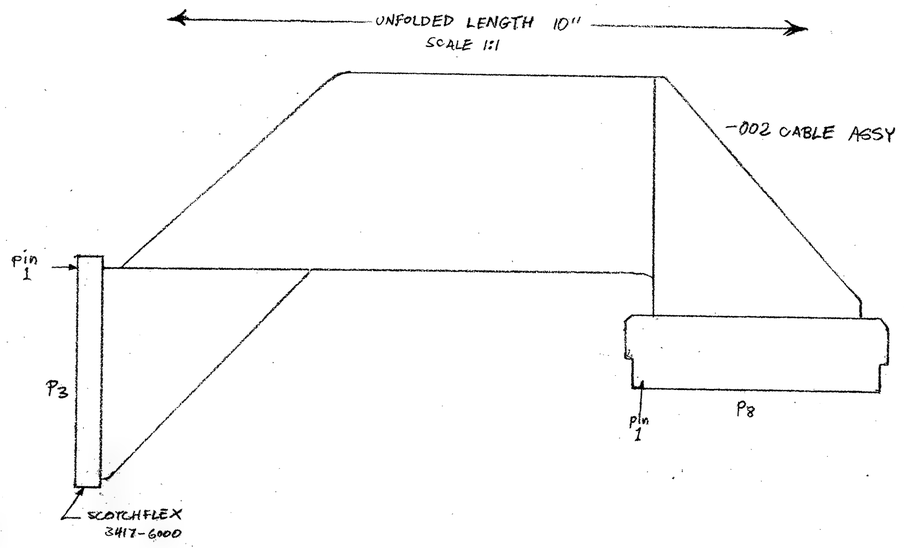
DETAIL 'C'
No SCALE

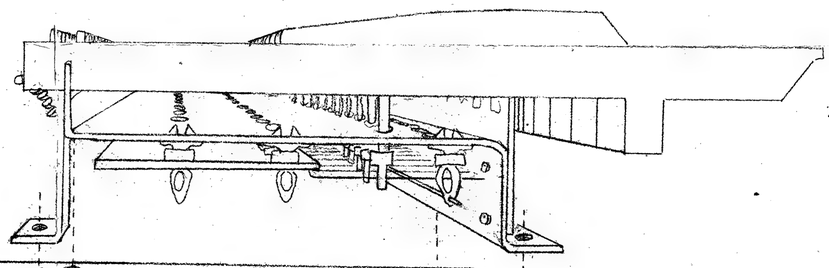
NOTES:

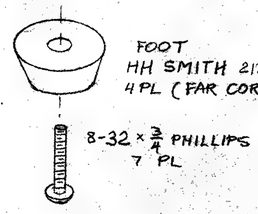
1. SPACERS MUST BE CRIMPED BEFORE SOLDERING. ALL SPACERS TO BE INSTALLED ON THE FOIL (NON-COMPONENT) SIDE OF ITEM 6
2. ALL ICs AND MODULES ARE INSTALLED SO THAT PIN 1 IS IN THE UPPER-LEFT CORNER.
3. AFTER SOLDERING CLEAN ASSY WITH FREON FLUX REMOVER.
4. APPLY EVEN COATING OF THERMAL GREASE ON HEATSINK MATING SURFACE OF BR1, BR2, VR1, VR2, VR3, AND U106

GLEEMAN INSTRUMENTS 415-964-1464	
MAIN BOARD - ASSY	
SCALE 1:1	DWG 506686 1/2
BY aff	DATE 2 NOV 82





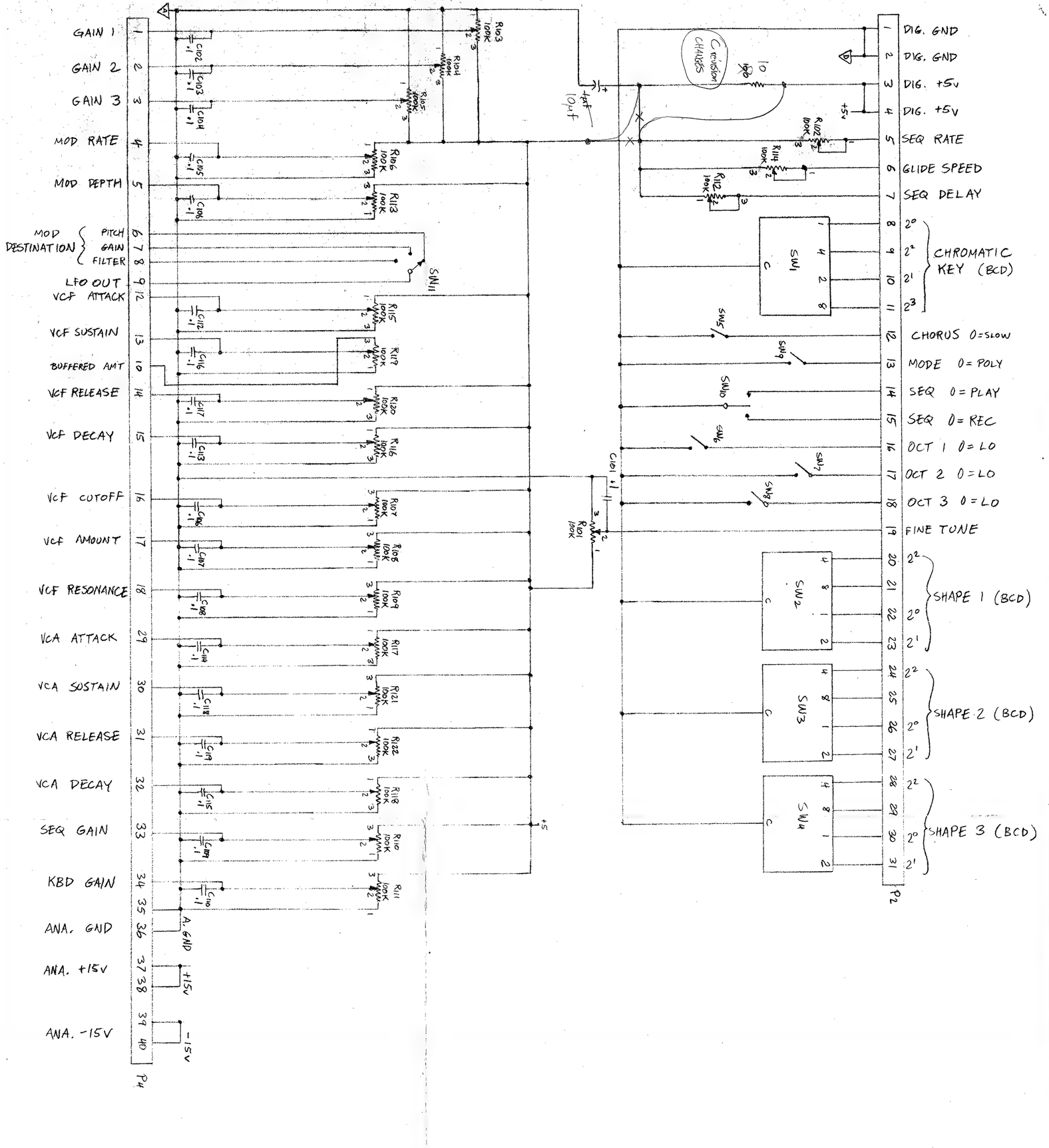




NOTES:

1. ASSEMBLY ORDER IS:
 1. MATE P3-J3.
 2. LOOSELY ASSEMBLE LOWER SECTION (KEYBOARD, MAIN ED ASSY, CASE BOTTOM). WITH 7 8-32 SCREWS.
 3. MATE P1-J1, P2-J2, P4-J4, P5-J5 P6-J6, P7-J7, P8- KEYBOARD.
 4. ASSEMBLE UPPER AND LOWER SECTIONS. USE CARE NOT TO DEMATE CONNECTORS.
 5. EQUALIZE SPACING ON EITHER SIDE OF KEYBOARD TO CASE.
 6. TIGHTEN 7 8-32 SCREWS.

GLEEMAN INSTRUMENT CO 415-364-1464	
LOWER SECTION- ASSY FINAL ASSY	
SCALE: NONE	DWG 33750B 1/1
BY dH	DATE 14 DEC 81



GLEEMAN INSTRUMENT CO. 115-9644-1464	
CONTROL BD - SCHEMATIC PENTAPHONIC	
SCALE: NONE	DWG 100408 1/1
BY AH	DATE 21 JUL 81

GLEEMAN INSTRUMENTS
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SERVICE BULLETIN

INSTALLATION OF INTERVAL-TUNING MODIFICATION
Pentaphonic 8110 Series

PREPARE WORKSPACE

You will need at least a 24" X 30" area on your workbench or tabletop. Spread a clean terrycloth towel over the surface to protect the Pentaphonic case.

REQUIRED TOOLS

Large Phillips screwdriver
24-pin IC removal tool
24-pin IC insertion tool
X-ACTO or similar knife

UNPLUG THE PENTAPHONIC

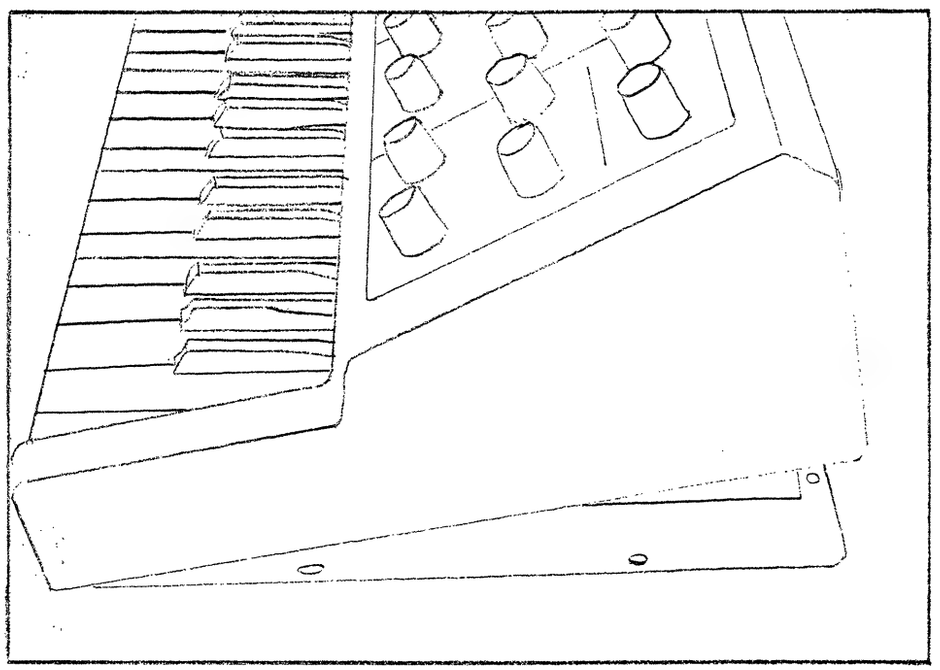
Although there are no exposed high-voltage conductors in the Pentaphonic, it never hurts to play safe. Installation of the Interval-Tuning Modification requires the Upper Assembly to rock back against the back surface. This often causes the actuation of the Power switch. Unpremeditated application of power during the installation of electronic circuitry is never desirable and easily prevented.

OPEN UNIT Fig. 1.

Using a large Phillips screwdriver remove ten 10-32 X 3/4 screws (8-32 in Clear models) from around the perimeter of the Unit. Do not remove the seven 8-32 screws which are also on the bottom but located well inside the perimeter.

When all ten screws have been removed hold the top and bottom together to prevent their uncontrolled separation. Place the Unit in the middle of the workspace in a normal playing position. Raise the back of the case a few inches, then slide it forward until the forward edge clears the keyboard. Raise the forward edge and lower the back until the Upper Assembly rests on its back.

Demate the two large 40-pin ribbon connectors J2 and J4. Demate the 6-pin power connector J6 and the three 10-pin ribbon connectors J1, J5, and J7. Set aside the Lower Assembly temporarily.



Remove perimeter screws, raise back, slide forward

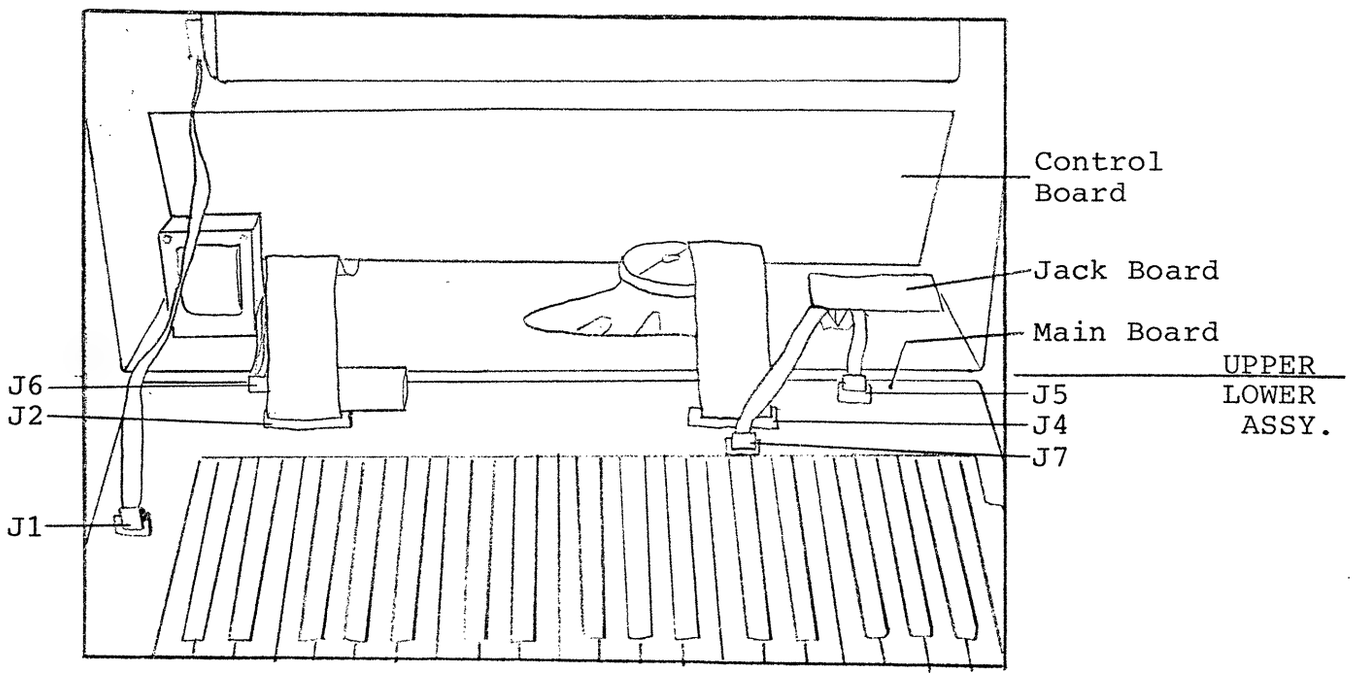


FIGURE 1

PRESETTER BOARD MODIFICATION Fig. 2.

Using a 24-pin IC removal tool pull out U9 from its socket.

Using a 24-pin IC insertion tool replace U9 with the new IC labeled "PRES 2.7". Make absolutely sure that the IC is installed right-side up (pin 1 at the upper left corner) and that all 24 pins have been seated into the socket.

Using an X-ACTO knife cut the U-shaped trace near U2. Make an opening in this trace at least as wide as the trace itself. This signals the presence of the modification to the Presetter software.

MAIN BOARD MODIFICATION

Set aside the Upper Assembly and retrieve the Lower Assembly. Remove the keyboard from the Lower Assembly by removing the four 8-32 screws which hold the keyboard to the bottom. Move the keyboard enough to gain access to U22; the keyboard cable need not be demated from J3.

Using a 24-pin IC removal tool pull out U22 from its socket.

Using a 24-pin IC insertion tool replace U22 with the new IC labeled "SYN 2.3K ". Make absolutely sure that the IC is installed right-side up (pin 1 at the upper left corner) and that all 24 pins have been seated into the socket.

REASSEMBLY Fig. 3.

Place the keyboard over the Lower Assembly and fasten with the four 8-32 screws removed earlier. Tighten firmly but not so tight that the screw heads distort the plastic (or rubber grommets, if present).

Position the Upper Assembly on its back directly behind the Lower Assembly.

Mate the 6-conductor power connector from the transformer to J6 on the Main Board, making absolutely sure it is connected properly. Damage will result from mismating this connector.

Mate the two 40-conductor ribbon cables to J2 and J4 on the Main Board, making sure they are not twisted.

Mate the three 10-conductor ribbon cables to J1, J5, and J7 on the Main Board, making sure that the triangle on each connector body lines up with the triangle on the mating connector body. (On J1 the triangle is on the back of the connector. On J5 and J7 the triangles are on the front.)

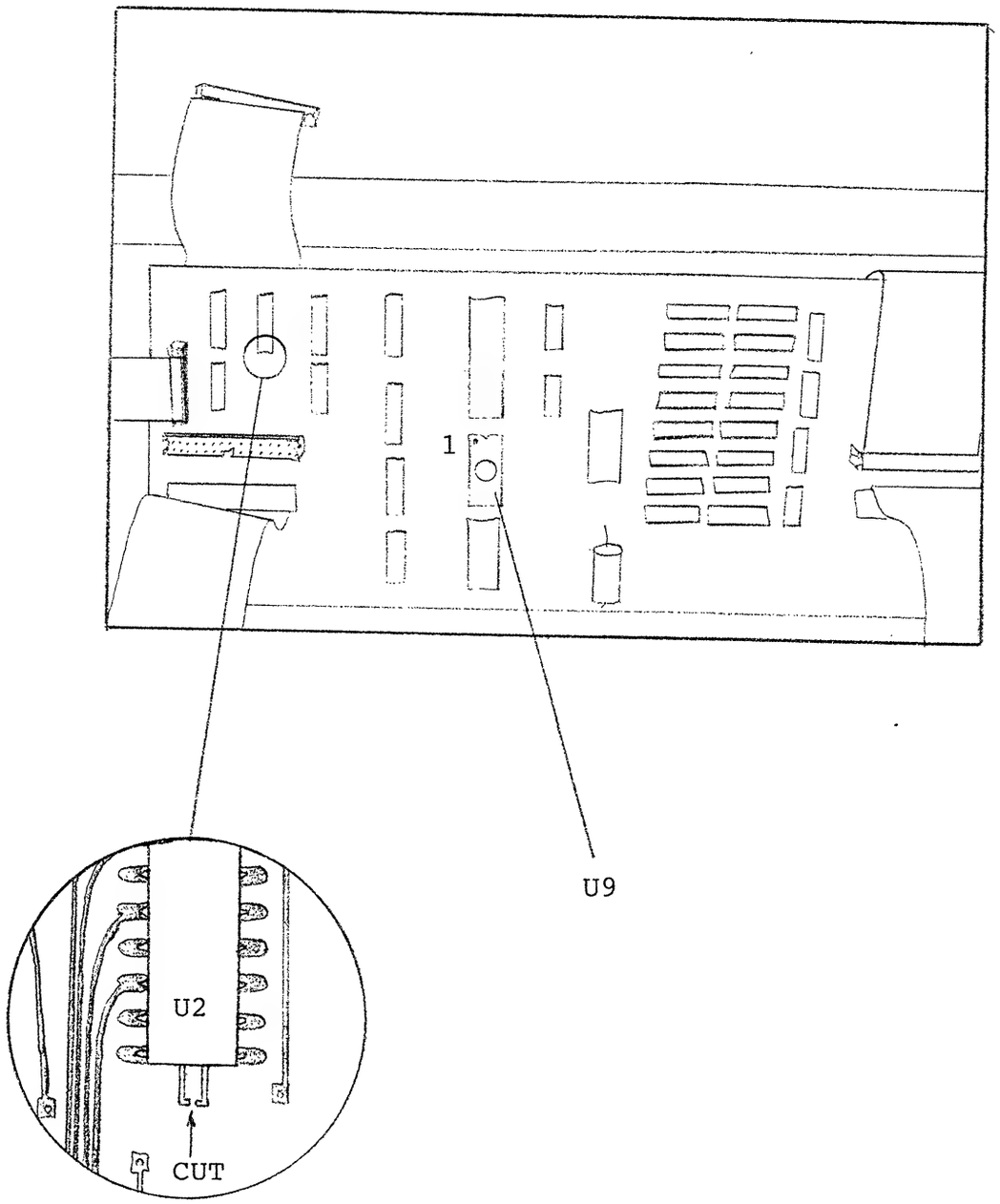
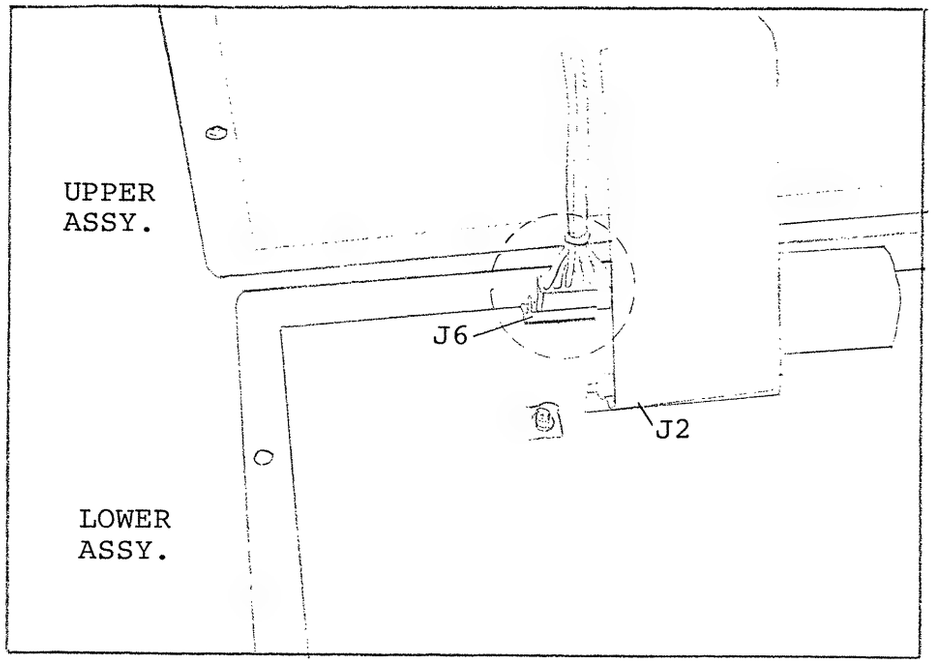


Fig. 2
PRESETTER BOARD MODIFICATION

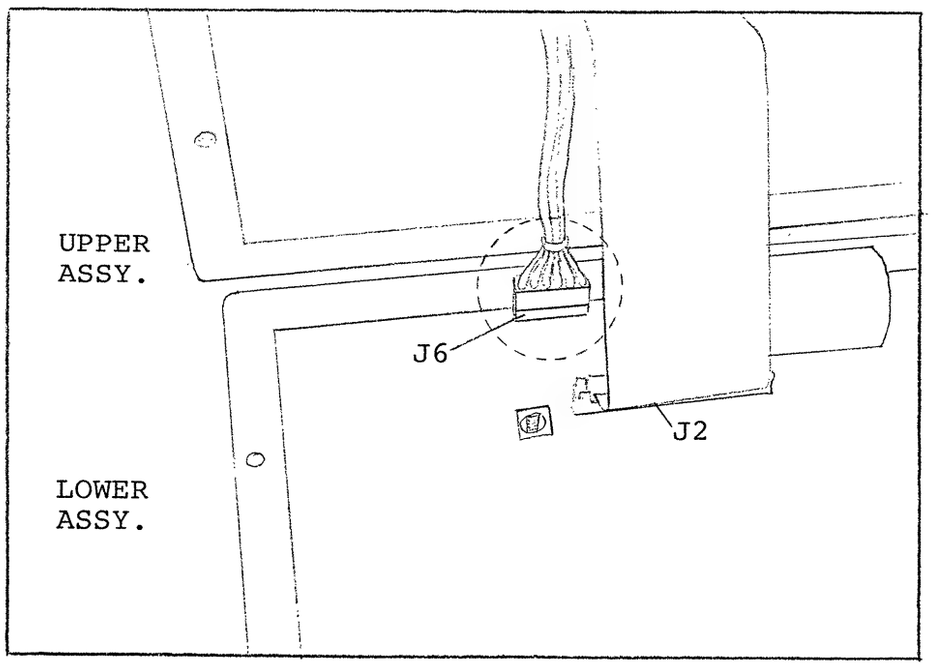
REASSEMBLY (Cont.)

Now close the Upper Assembly down over the Lower Assembly. As you do so, make sure the various ribbon cables do not interfere with the keyboard and are not caught between the case top and bottom. The case top will have to be positioned slightly forward in order to slip the forward edge under the keyboard. Lower the case top all the way until it seats against the bottom.

Fasten the top and bottom together with the ten 10-32 screws (8-32 for Clear models) removed earlier, tightening firmly but not so tight that the screw heads distort the plastic (or rubber grommets, if present).



The WRONG way
to install J6



The right way
to install J6

FIGURE 3

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SERVICE BULLETIN

INSTALLATION OF THE PENTAPHONIC PRESETTER

PREPARE WORKSPACE

You will need at least a 24" X 30" area on your workbench or tabletop. Spread a clean terrycloth towel over the surface to protect the Pentaphonic case.

REQUIRED TOOLS

Large Phillips screwdriver
Small Phillips screwdriver
Needlenose pliers
Scotchflex puller (supplied)
Decorative nut wrench (supplied)
X-ACTO blade (supplied) and handle
Pliers

UNPLUG THE PENTAPHONIC

Although there are no exposed high-voltage conductors in the Pentaphonic, it never hurts to play safe. Installation of the Presetter module requires the upper assembly to rock back against the back surface. This often causes the actuation of the power switch. Unpremeditated application of power during the installation of electronic circuitry is never desirable and easily prevented.

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SERVICE BULLETIN

OPEN UNIT (FIGURE 1)

Using a large Phillips screwdriver, remove ten 10-32 X 3/4 Phillips screws from around the perimeter of the bottom of the Unit. Do not remove the seven 8-32 X 3/4 screws which are also on the bottom but located well inside the perimeter.

When all ten screws have been removed, hold the top and bottom together to prevent their uncontrolled separation. Place the Unit in the middle of the workspace in a normal playing position. Raise the back of the case a few inches, then slide it forward until the forward edge clears the keyboard. Raise the forward edge and lower the back until the upper section rests on its back.

Demate the two large 40-pin ribbon connectors using the Scotchflex puller. You may damage the ribbon or connector if you attempt to pull these connectors out by the ribbon. Demate the 6-pin power connector and the three 10-pin ribbon connectors. As these have strain reliefs, it is safe to pull these out (gently) by the ribbon cable.

Set aside the bottom assembly, as all installation work will be done on the upper assembly.

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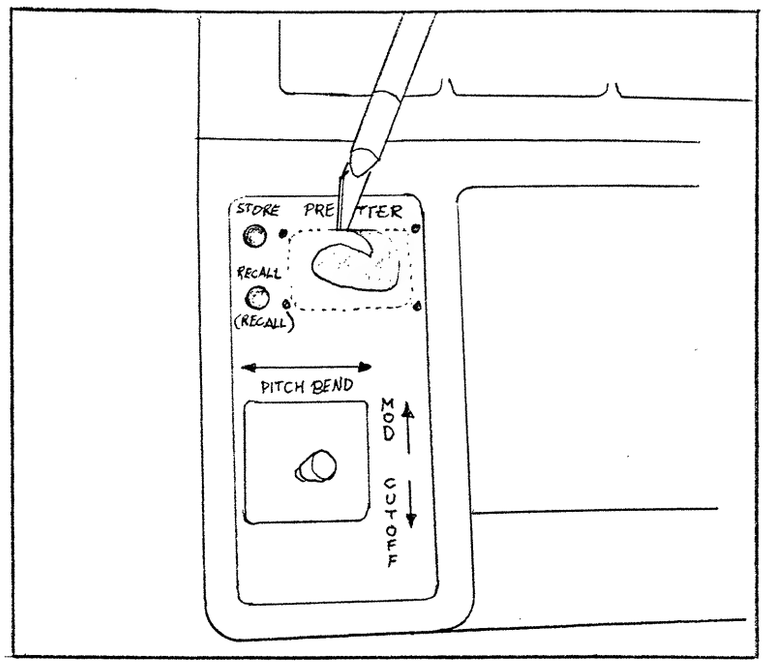
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SERVICE BULLETIN

CUT OUT OPENINGS (FIGURE 2)

Position the upper assembly in a normal playing position. Install a new blade in your X-ACTO handle. (Caution - the blade is razor sharp.) There are six circular openings and one rectangular opening to be cut into the mylar nameplate behind the joystick. The centers of the circular openings are marked with a '+'. Begin with the 'STORE' and 'RECALL' openings as they are the easiest. Use a short sawing motion to cut the mylar material, and use the case opening beneath it as a cutting guide. Try not to remove any of the case itself as this will make the opening irregular in shape. Best results are obtained by holding the cutting edge at right angles to the surface of the case. After cutting al the way around, remove the excess material.

The center of the large rectangular cutout is not marked with a '+', but is located at the center of the four small circular cutouts you have just made. You can easily feel it when you press the area lightly with your finger. The edges of this cutout will be visible when your installation is complete, so it is important to do a neat job. Start the cut near the center, and cut a plug of material out roughly the diameter of your thumb. This will allow you to see the edges of the case cutout. Work your way closer to the edges, removing smaller and smaller amounts of material until the cut edges coincide with the edges of the case opening.



Cutting the Mylar nameplate

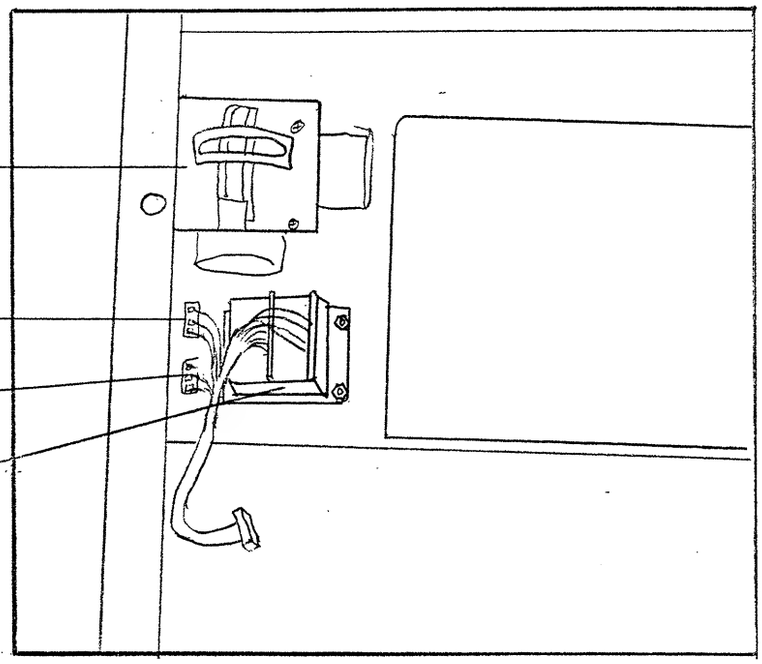


FIGURE 2

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INSTALL SWITCHES

Set the leverswitches to their extreme position so they read '99'. This will determine the top and bottom of the leverswitch assembly. Install the leverswitch assembly from the inside of the case, through the rectangular cutout, and oriented so that the bottom of the leverswitch is toward the joystick. (The leverswitch numbers should be right-side up when viewed from a normal playing position.) Use the four 2-56 X ½ screws and nuts to fasten the leverswitch assembly to the Unit. A needlenose plier may be necessary to hold the nuts as the screws are tightened with a small Phillips screwdriver. Make sure the leverswitch assembly is positioned squarely before tightening the screws. Use just enough torque to securely fasten the leverswitch assembly; overtightening could distort the mylar nameplate.

Next install the 'RECALL' toggle switch using a lock-washer below the case and a decorative nut above the case. Make sure the momentary position of the switch is toward the joystick. This is the (RECALL) position. Tighten the decorative nut with the decorative nut wrench while holding the switch gently with pliers.

Install the STORE pushbutton using a lockwasher below the case and a switch guard above the case. Hold the pushbutton gently with the needlenose and lightly tighten the switch guard with pliers.

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SERVICE BULLETIN

CLOSE THE UNIT (FIGURE 4)

Installation of the Presetter is now complete. Raise the upper assembly so that it rests on the back surface. Bring the lower assembly back to the workspace and position it directly in front of the lower assembly, with the keyboard toward you.

Mate the 6-conductor power connector from the transformer to J6 on the Main Board, making absolutely sure it is connected properly. Damage will result from mismating this connector.

Mate the two 40-conductor ribbon cables to J2 and J4 on the Main Board.

Now mate the three 10-conductor ribbon cables to J1, J5, and J7 on the Main Board, making sure that the triangle on each connector body lines up with the triangle on the mating connector body. (On J1 the triangle is on the back of the connector. On J5 and J7 the triangles are on the front.)

Now close the upper assembly down over the lower assembly. As you do so, make sure the various ribbon cables do not interfere with the keyboard and are not caught between the case top and bottom. The case top will have to be positioned slightly forward in order to slip the forward edge under the keyboard. Then the case top can be lowered all the way until it seats against the bottom. Fasten the top and bottom together with the ten 10-32 X 3/4 screws removed earlier, tightening firmly but not so tight that the screw heads distort the plastic.

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INSTALL PRESETTER BOARD (FIGURE 3)

First install the four Richlok fasteners to the Control Board by pushing them into the appropriate holes until a snap is heard. Test them for snugness by pulling them with your fingers. They should not come out.

Drape the 40-conductor ribbon cables so that they are resting flat against the Control Board.

Now place the Presetter Board over the Control Board until the Richlok fasteners line up with the matching holes on the Presetter Board. Make sure the AC wiring is not caught between the boards, and that the 40-conductor cables are not caught on the Richlok fasteners. Then push the boards together at each fastener until a snap is heard at each fastener.

Mate the 20-pin connector from the switches to J1 on the Presetter Board, making sure the triangle on the connector body lines up with the triangle on the Board.

Now mate the two 40-pin connectors to J2 and J4 on the Presetter Board in the same way.

415-988-8628

SYN 2.2L — F-boards only, no BBU, osc detuning 600-note seq
SYN 2.3K — G-boards only, no BBU, osc detuning
DENTON — F-board, no BBU, osc detuning, instant glide
no seq delay,
SYN2.3H — G-board, "Chris Page Special"
SYN2.2K1 — F-board, no BBU
SYN2.2 K2 — F-board, BBU
SYN2.2K3 — F-board, no BBU, 300-note seq
SYN2.3K5 - G-board, noBBU, chorus-off mod
SYN2.3K6 - G-board, BBU, chorus-off mod
SYN 2.2L1 - F-board, no BBU, instant glide mod
SYN 2.2L2 - F-board, BBU, instant glide
SYN 2.2L3 - F-board, no BBU, 300-note seq, instant glide mod
SYN 2.3L4 - G-board, no BBU, chorus off mod, instant glide mod
SYN 2.3L5 - G-board, BBU, chorus off mod, instant glide mode

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VERIFY OPERATION

Position the RECALL switch to its middle (straight-up) position. Plug in the AC line cord and turn on the AC power switch. Verify that all front-panel control knobs and switches perform their function. Failure of any or all knobs to function properly could mean a mal-functioning Presetter Module.

Now set the leverswitch to '50' and set the RECALL switch to latched RECALL. The "Typical Piano" preset should be obtained. If it is not, it may mean that the Factory Presets are not loaded into non-volatile memory. See "Load Factory Presets into Non-volatile Memory". Verify the presence of presets in positions 00 through 99. Verify that you can store patches using the STORE pushbutton.

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SERVICE BULLETIN

LOAD FACTORY PRESETS INTO NON-VOLATILE MEMORY (FIGURE 5)

Occasionally it will be necessary to load the factory presets into non-volatile memory, usually after initial installation of the Presetter Module or replacement of the Lithium battery. This is done with the internal switches which are accessible through the heat-vent slot, second from the left as you view it from a normal playing position. Follow these steps in the order given:

1. Set the RECALL switch to latched RECALL.
2. Set internal switch #2 to the left ("factory" position).
3. Press the STORE pushbutton and hold.
4. Turn on the AC power switch. If the power is already on, momentarily actuate internal switch #3 by moving it to the left, then releasing.
5. Release the STORE pushbutton.
6. Set internal switch #2 to the right ("normal" position).

Verify the presence of presets in locations 00 through 99.

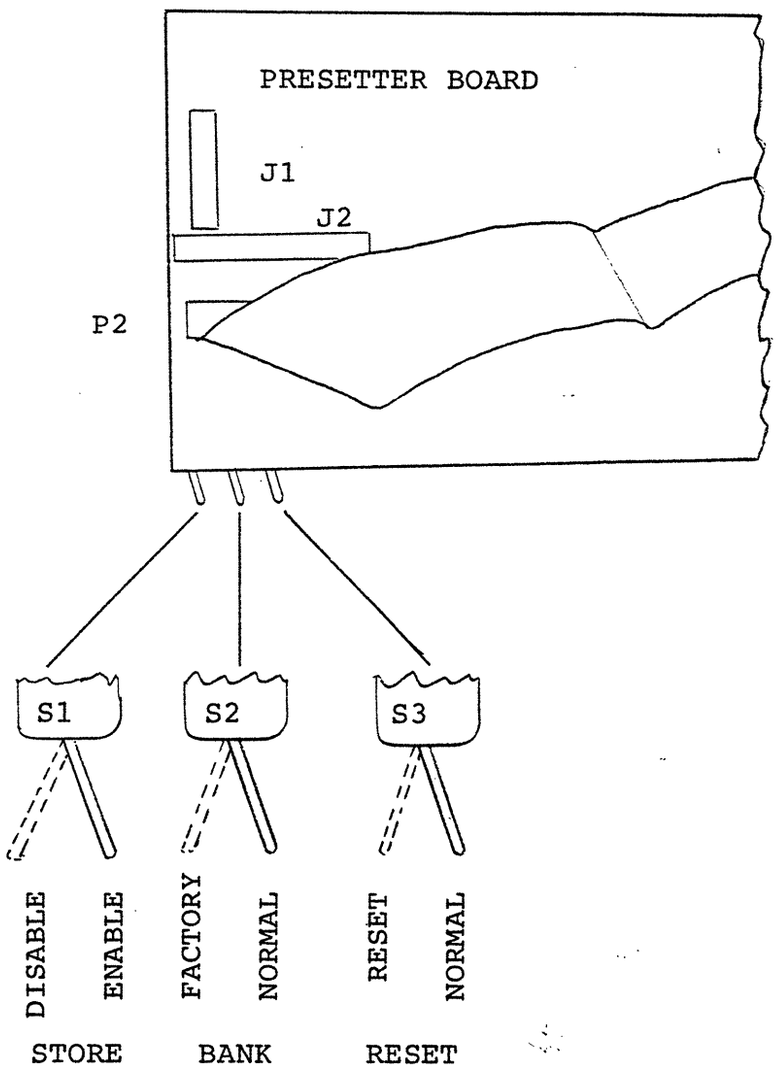

PRESETTER BOARD
J1
J2
P2
S1
S2
S3
DISABLE
ENABLE
FACTORY
NORMAL
RESET
NORMAL
STORE
BANK
RESET

FIGURE 5

ID	DESC	VAL	MFG	CODE
C87	10μf 25v TANT	TAPS10M25	ITT	1
C1-C3	2200μf 35v ELECTROLYTIC	ECE-B1VV222S	PANASONIC	3
C4-C6, C9, C185	22μf 25v AL	25RE22	ELNA	6
C10-C19	1μf 35v TANT	TAPS1M35	ITT	10
C21	22pf 10% CER 220	CK05BX220K		1
C22-C26	330pf 10% CER 331	MATCH TO 2%		5
C27-C47	150pf 10% CER 151	MATCH C28-C47 TO 2%		11
C48-C57	.047μf 10% CER 473	MATCH TO 2%		10
C58-C63, C69-C82	.01μf 20% CER 103			20
C83-C132 C153, C154	.1μf 20% CER 104	MATCH C125-C129 TO 2%		52
C133	.47μf 20% CER 474			1
C135 a b	80pf 33pf NPO 47pf N1500			1 1
C142, C144-C148	1000pf 20% CER 102			6
C64-C68	.02 20% CER 223			5
C1	2200μF 50V			
R211	470K ¼W "	SBB¼-470K	"	1
R142, R198	18K ¼W CARB-FILM	SBB¼-18K	DALE	2
R183-R197	39K ¼W "	SBB¼-39K	"	15
R176-R181	27K ¼W "	SBB¼-27K	"	6
R1	47 1W WIREWOUND 1%	RS1A-47	DALE	1
R2, R3, R144	20K ¼W CARB-FILM 5%	SBB¼-20K	"	3
R4-R13	750 ¼W "	SBB1/4-750	"	10
R14-R18	1.5K ¼W "	SBB1/4-1.5K	"	5
R19-R23	1M ¼W "	SBB¼-1M	"	5
R24	75K ¼W "	SBB1/4-75K	"	1
R25-R43, R182 R206, R209	10K ¼W "	SBB1/4-10K	"	22
R44, R45, R208	100 ¼W "	SBB1/4-100	"	3
R46-54, R65, R66	47K ¼W "	SBB1/4-47K	"	11
R67	3.8K ¼W "	SBB1/4-3.3K	"	1
R68	56K ¼W "	SBB¼-56K	"	1
R69-R70	10 ¼W "	SBB1/4-10	"	2
R71-R79, R207	1K ¼W "	SBB1/4-1K	"	10
R199, R201, R202	6.8K ¼W "	SBB1/4-6.8K	"	3
R80-R116, R210	100K ¼W "	SBB1/4-100K	"	38
R118-R137	220K ¼W "	SBB¼-220K	"	19
R138, R139, R203	2K ¼W "	SBB1/4-2K	"	3
R140-R141	390K ¼W "	SBB¼-390K	"	2
R205	150 ¼W "	SBB¼-150	"	1
R117, R143	120K ¼W "	SBB1/4-120K	"	2
R145-R151	33K ¼W "	SBB1/4-33K	"	7
R55-64, R152-163	24K ¼W "	SBB1/4-24K	"	22
R164-R175, R204	470 ¼W "	SBB1/4-470	"	13
R200	1.8K ¼W "	SBB¼-1.8K	"	1
U1	DM74C02N		NS	(1)
U2	DM74C74N		NS	(1)
U3	ADC0804LCN $2.68		NS	(1)
U4, U5	N8556N $0.62		SIG	2
U6	DM74LS373N $0.75		NS	(1)
U7	AM8085APC		AMD	(1)
U8-U10	DM74LS138N		NS	(3)
U11	DM74LS00N		NS	(1)
U12-U14	CD4099BE $0.78		RCA	2
U15-U21	DM81LS95N		NS	(7)
U22	MCM2716C (LATEST REV.)		MOT	(1)
U23	TC5517APL		TOSHIBA	(1)

ID	DESC	VAL	MFG	CODE
U24-U26	AM9513DC $7.00		AMD	(3)
U27-U35	CD4520BCN		NS	(9)
U36-U50	TBP28L22N (LATEST REV.)		TI	(15)
U51-U65	DAC0807LCN / LM1408N		NS	(15)
U66-U81	LM348N $1.00		NS	16
U82	SN74LS628N $1.88		TI	(1)
U83-U85	LF13333N		NS	(3)
U86-U95	CEM3310		CURTIS	10
U96-U100	CEM3320		CURTIS	5
U101-U105	CEM3360		CURTIS	5
U106	TDA2030H		SGS	1
J1, J5 J7, J9	CONNECTOR	3491-2002	3M	4
J2-J4	"	3495-2002	3M	3
J6	"	09-60-1061	MOLEX	1
J8	DIP SOCKET			1
RM1-RM8	RESISTOR MODULE 3.3K×9	4310R-101-332 $.89	BOURNS	(8)
RM9-RM11	" " 56×5	4306R-101-560 $.64	"	(3)
RM12-RM14	" " 2K×5	4306R-101-202 $.64	"	(3)
RM15	" " 2K×5	4310R-102-202 $.89	"	(2)
RM16-RM18	" " 100K×5	4306R-101-104 $.64	"	(3)
RM19-RM23	" " 100K×8	4116R-001-104 $.80	"	5
				1
Q1, Q2, Q5	TRANSISTOR NPN	2N2222A	MOT	3
Q3, Q4	TRANSISTOR PNP	2N2907A	MOT	2
X1	CRYSTAL 6 MHz	NDK060	NDK	1
BR1, BR2	BRIDGE RECT.	VH248	VARO	2
VR1	+5v REGULATOR	μA78H05SC	FSC	(1)
VR2	+15v REGULATOR	LM340T15	NS	(1)
VR3	-15v REGULATOR	LM320T-15 OR MC7915CT	NS OR MOT	(1)
D23	ZENER DIODE 3.9v	1N5228B $0.29	MOT	1
D1-D14, D22 D24-D32	DIODE	1N4148	MOT	24
D15-D16	DIODE	1N4001	MOT	2
D17-D21	ZENER DIODE 6.8v	1N5235B $0.29	MOU	5
(12)	40-pin IC SOCKET UNDER U7			1
(13)	24-pin IC SOCKET UNDER U22			1
(1)	NUT	6-32		(5)
(3)	HEATSINK	UP-T03CB	IERC	(2)
(4)	KAPTON TAPE			(AR)
(5)	SCREW	6-32 × 3/8		(5)
(6)	PRINTED WIRING BOARD	P50667G	MARTEX	(1)
(7)	HEATSINK	THM 6106-13	THERMALLOY	(3)
(8) [1]	SPACER, UNTHREADED	B1599B 1/8	USECO	(4)
(9) [1]	SPACER, THREADED	B1523B 1/2	USECO	(3)
(10)	HEATSINK			2
(11)	SCREW	8-32 × 3/8		2
	THERMAL GREASE [4]			AR

MK4116

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DWG 50668G 2/2

J14
VCF-RES-ONANCE
18
U95 LM348
R193 39K
R19 1M -15
C10 1µf
A0 Sh. 3
C28 150pf
C29 150pf
C30 150pf
C31 150pf
R14 1.5K -15
+15
U96 CEM3220
RM19 100K
R123 220K -15
R124 220K -15
R125 220K -15
FC0 Sh. 4
R188 39K
C15 1µf
U75 LM348
SO0 Sh. 6

R194 39K
R20 1M -15
C11 1µf
A1 Sh. 3
C32 150pf
C33 150pf
C34 150pf
C35 150pf
R15 1.5K -15
+15
U97 CEM3220
RM20 100K
R126 220K -15
R127 220K -15
R128 220K -15
FC1 Sh. 4
R189 39K
C16 1µf
U76 LM348
SO1 Sh. 6

R195 39K
R21 1M -15
C12 1µf
A2 Sh. 3
C36 150pf
C37 150pf
C38 150pf
C39 150pf
R16 1.5K -15
+15
U98 CEM3220
RM21 100K
R129 220K -15
R130 220K -15
R131 220K -15
FC2 Sh. 4
R190 39K
C17 1µf
U77 LM348
SO2 Sh. 6

R196 39K
R22 1M -15
C13 1µf
A3 Sh. 3
C40 150pf
C41 150pf
C42 150pf
C43 150pf
R17 1.5K -15
+15
U99 CEM3220
RM22 100K
R132 220K -15
R133 220K -15
R134 220K -15
FC3 Sh. 4
R191 39K
C18 1µf
U78 LM348
SO3 Sh. 6

R197 39K
R23 1M -15
C14 1µf
A4 Sh. 3
C44 150pf
C45 150pf
C46 150pf
C47 150pf
R18 1.5K -15
+15
U100 CEM3220
RM23 100K
R135 220K -15
R136 220K -15
R137 220K -15
FC4 Sh. 4
R192 39K
C19 1µf
U79 LM348
SO4 Sh. 6

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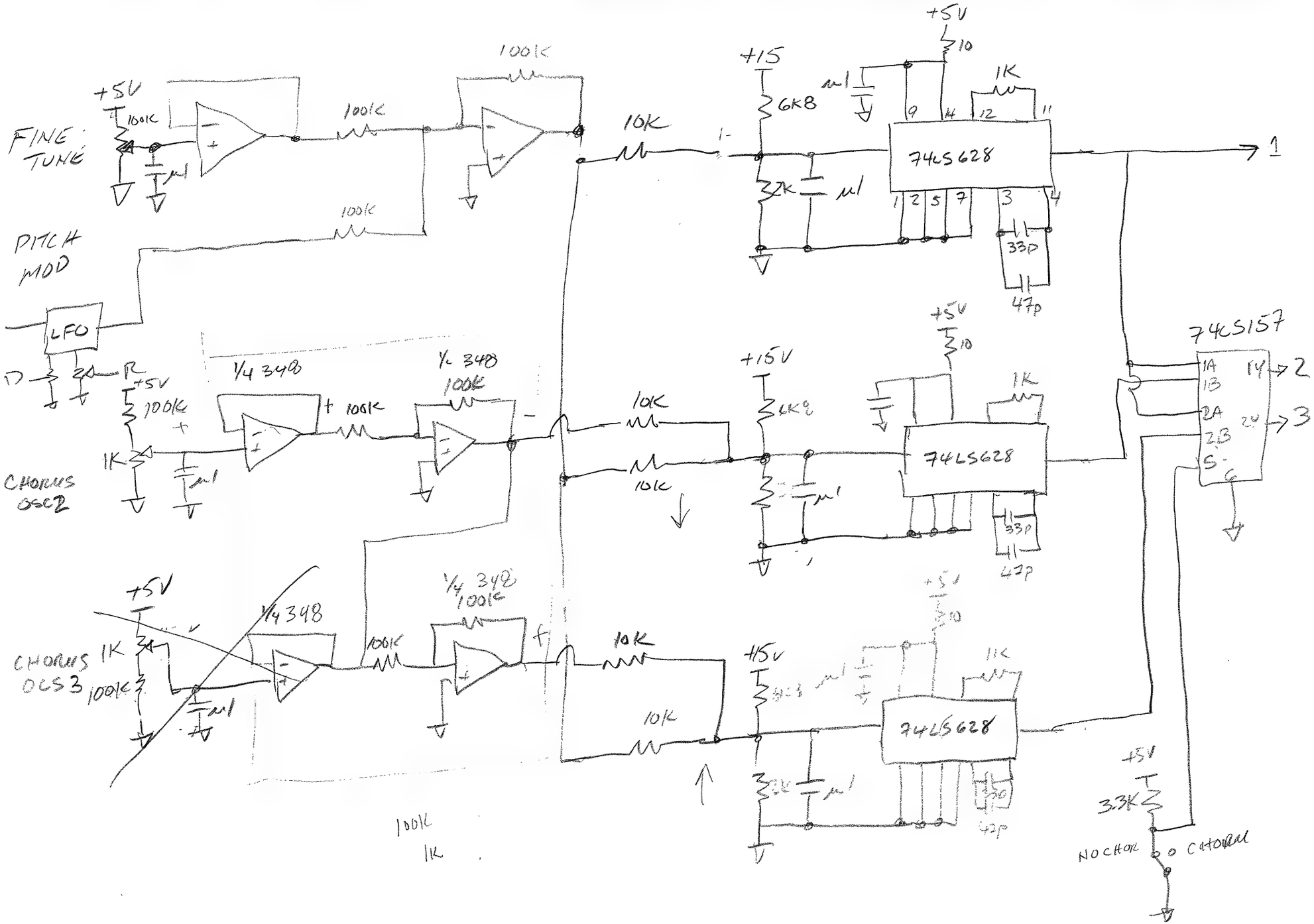
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C1-C3	2200µf 35v ELECTROLYTIC	ECE-B1VV222S	PANASONIC	3
C4-C6, C9, C165	22µf 25v Al	25RE22	ELNA	6
C10-C19	1µf 35v TANT	TAPS1M35	ITT	10
C21	22pf 10% CER 220	CK05BX220K		1
C22-C26	330pf 10% CER 331	MATCH TO 2%		5
C27-C47	150pf 10% CER 151	MATCH C28-C47 TO 2%		21
C48-C57	.047µf 10% CER 473	MATCH TO 2%		10
C58-C63, C69-C82	.01µf 20% CER 103			20
C83-C132 EXCEPT C114, C153, C154	.1µf 20% CER 104	MATCH C125-C129 TO 2%		51 52
C133, C114	.47µf 20% CER 474			2
C135 (a) (b) 2	80pf 33pf NPO 47pf N1500			1
C142, C144-C148	1000pf 20% CER 102			6
C64-C68	.02 20% CER 223			5

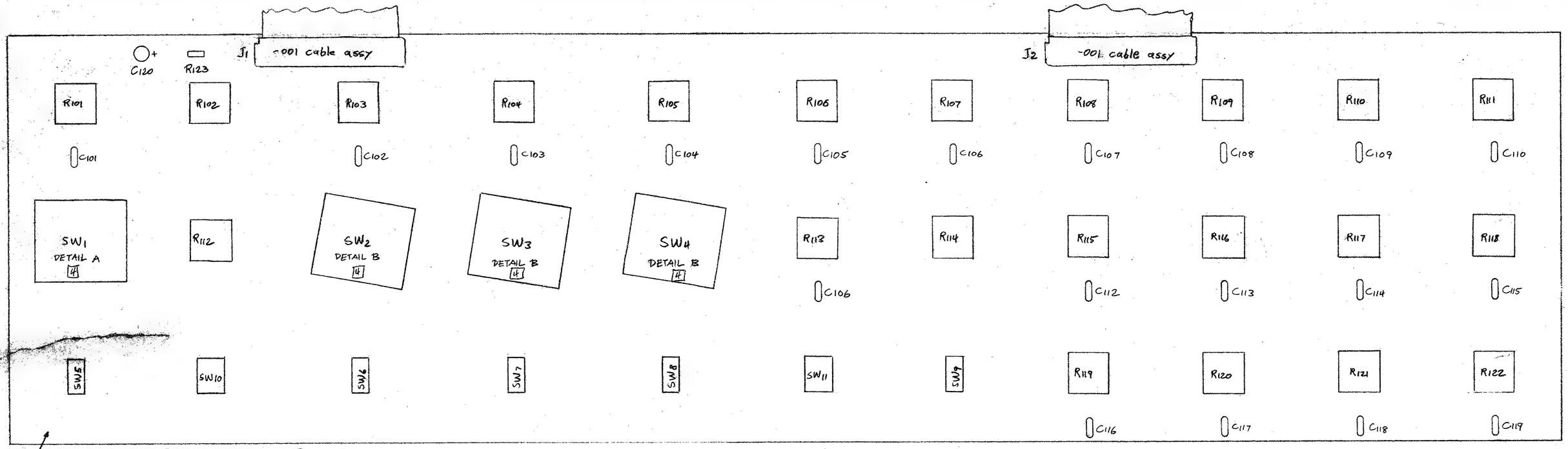
R142, R198	18K	¼W	CARB-FILM	SBB1/4-18K	DALE	2
R183-R197	39K	¼W	"	SBB1/4-39K	"	15
R176-R181	27K	¼W	"	SBB1/4-27K	"	6
R1	47	1W	WIREWOUND 1%	RS1A-47	DALE	1
R2, R3, R147	20K	¼W	CARB-FILM 5%	SBB1/4-20K	"	3
R4-R13	750	¼W	"	SBB1/4-750	"	10
R14-R18	1.5K	¼W	"	SBB1/4-1.5K	"	5
R19-R23	1M	¼W	"	SBB1/4-1M	"	5
R24	75K	¼W	"	SBB1/4-75K	"	1
R25-R43, R192 R206, R209	10K	¼W	"	SBB1/4-10K	"	22
R44, R45, R208	100	¼W	"	SBB1/4-100	"	3
R46-54, R65, R66	47K	¼W	"	SBB1/4-47K	"	11
R67	3.8K	¼W	"	SBB1/4-3.3K	"	1
R68	56K	¼W	"	SBB1/4-56K	"	1
R69-R70	10	¼W	"	SBB1/4-10	"	2
R71-R79, R207	1K	¼W	"	SBB1/4-1K	"	10
R199, R201, R202	6.8K	¼W	"	SBB1/4-6.8K	"	3
R80-R116, R210, 211	100K	¼W	"	SBB1/4-100K	"	39 38
R118-R137	220K	¼W	"	SBB1/4-220K	"	19
R138, R139, R203	2K	¼W	"	SBB1/4-2K	"	3
R140-R141	390K	¼W	"	SBB1/4-390K	"	2
R117, R143	120K	¼W	"	SBB1/4-120K	"	2
R145-R151	33K	¼W	"	SBB1/4-33K	"	7
R55-64, R152-163	24K	¼W	"	SBB1/4-24K	"	22
R164-R175, R204	470	¼W	"	SBB1/4-470	"	12 13
R200	1.8K	¼W	"	SBB1/4-1.8K	"	1
(1) U1	DM74C02N				NS	(1)
(2) U2	DM74C74N				NS	(1)
U3	ADC0804LCN				NS	(1)
(2) U4, U5	NE556N				SIG	2
U6	DM74LS373N				NS	(1)
U7	AM8085APC SOCK				AMD	(1)
U8-U10	DM74LS138N				NS	(3)
U11	DM74LS00N				NS	(1)
U12-U14	CD4099BE				RCA	2
U15-U21	DM81LS95N				NS	(7)
U22	MCM2716C (LATEST REV.) SOCK				MOT	(1)
U23	TC5517APL				TOSHIBA	(1)

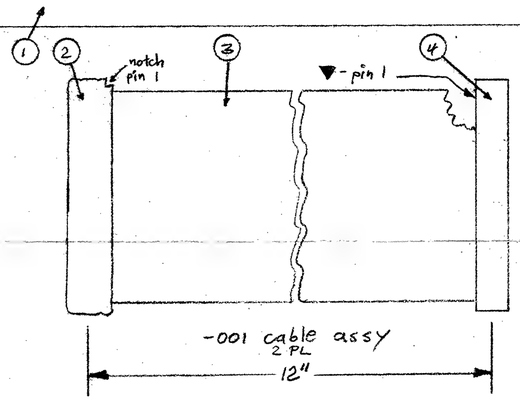
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U24-U26	AM9513DC		AMD	(3)
U27-U35	CD4520BCN		NS	(9)
U36-U50	TBP28L22N (LATEST REV.)		TI	(15)
U51-U65	DAC0807LCN		NS	(15)
U66-U81	LM348N		NS	16
U82	SN74LS628N		TI	(1)
U83-U85	LF13333N		NS	(3)
U86-U95 (2)	CEM3310 "15"		CURTIS	10
U96-U100	CEM3320 "12.0K3V"		CURTIS	5
U101-U105	CEM3360		CURTIS	5
U106	[redacted]			
J1, J5 (J7) J9	CONNECTOR	3491-2002	3M	3 4
J2-J4	"	3495-2002	3M	3
J6	"	09-60-1061	MOLEX	1
				1
RM1-RM8	RESISTOR MODULE 3.3K×9	4310R-101-332	BOURNS	(8)
RM9-RM11	" " 56×5	4306R-101-560	"	(3)
RM12-RM14	" " 2K×5	4306R-101-202	"	(3)
RM15	" " 2K×6	4310R-102-202	"	1 (2)
RM16-RM18	" " 100K×5	4306R-101-104	"	(3)
RM19-RM28 (1)	" " 100K×8	4116R-001-104	"	5
				1
Q1, Q2, Q5	TRANSISTOR NPN	2N2222A	MOT	1 3
Q3, Q4	TRANSISTOR PNP	2N2907A	MOT	1 2
X1	CRYSTAL 6 MHz	NDK060	NDK	1
BR1, BR2	BRIDGE RECT.	VH2W8	VARO	2
	[redacted]			
D1-D14, D22 D24-D32	DIODE	1N4148	MOT	13 24
D15-D16	DIODE	1N4001	MOT	2
D17-D21	ZENER DIODE 6.8v	1N5235B	MOU	5
(12)	40-pin IC SOCKET UNDER U7			1
(13)	24-pin IC SOCKET UNDER U22			1
	[redacted]			
(6)	PRINTED WIRING BOARD	P50667G	MARTEX	(1)
	[redacted]			

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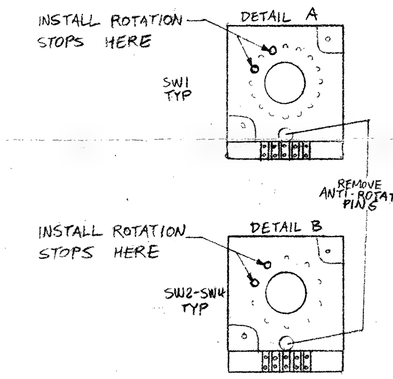
DWG 50668G 2/2

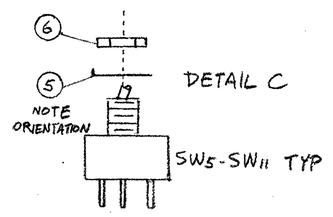

FINE TUNE
+5V
100K
1µ
PITCH MOD
LFO
CHORUS OSC2
1/4 348
CHORUS OSC3
10K
+15
6K8
2K
74LS628
33P
47P
74LS157
1A
1B
2A
2B
S
1Y
2Y
1
2
3
NO CHOR
CHORUS
33K





NOTES:
1. FORM LEADS WITH JIG #10043 PRIOR TO INSERTION.
2. deleted
3. TOGGLE SWITCHES ARE INSTALLED WITH NOTCH ON BUSHING IN 12 O'CLOCK POS. ADD ITEMS 5 & 6 PRIOR TO NEXT ASSEMBLY (33741) SEE DETAIL C
4. INSTALL ROTATION STOPS PER DETAILS A AND B

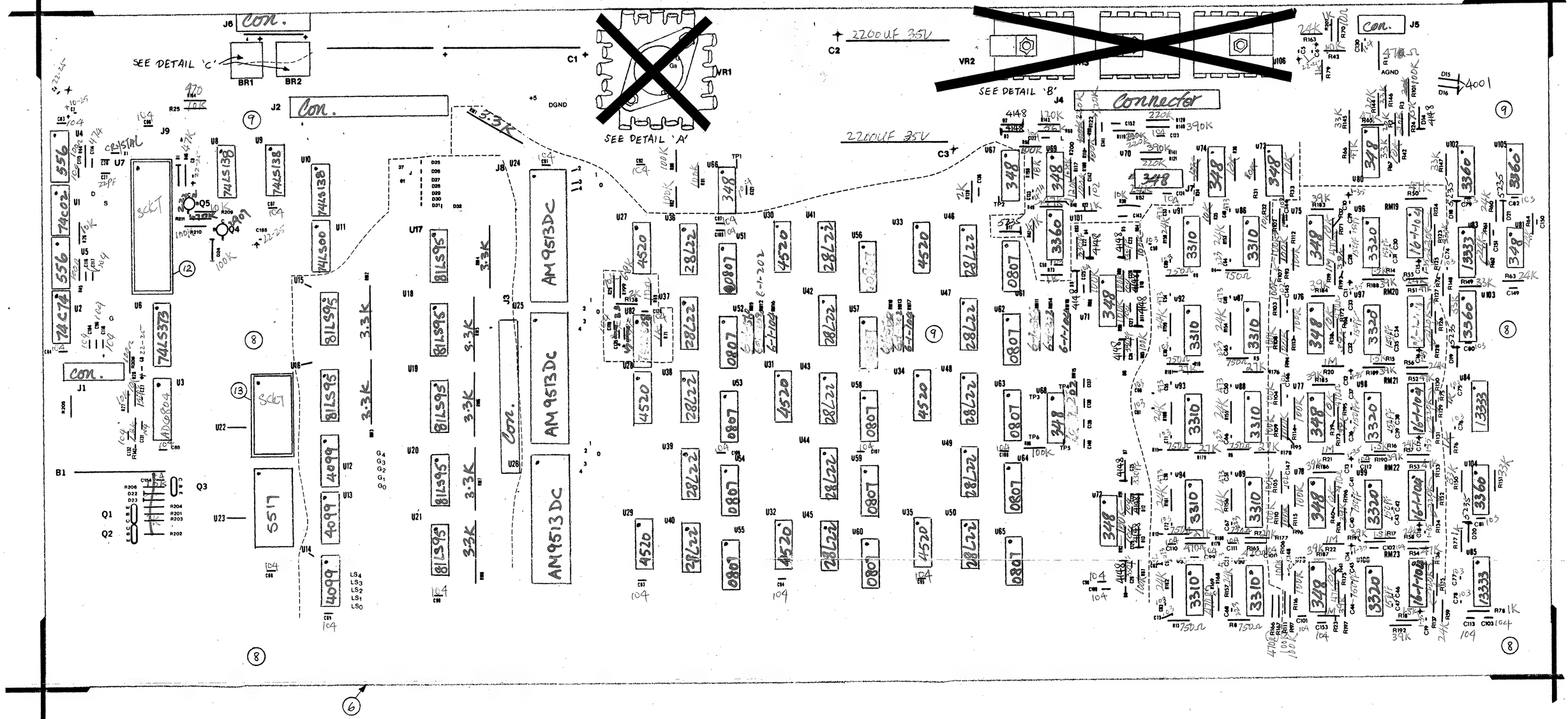


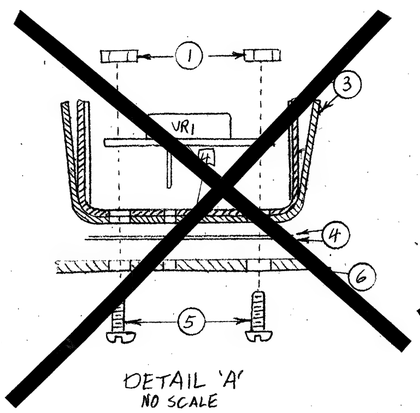


		ID	DESC	VAL	MFG	CODE
3	3	R101-R122	100K LIN POTENTIOMETER [1]	91A1D-B24-B20	BOURNS	(22)
66	3					
2	2	R123	10 ¼W 5%	SBB¼-10 Ω5%	DALE	(1)
36	2	C101-C119	0.1μf 50v (C111 deleted)	RPE112 Z5U 104M	MURATA	(18)
2	2	C120	10μf 25v TANT	TAPS10M25	ITT	(1)
5	5	SW1	COMP. HEX ROTARY (STOCK #35987-1)	80-4580-58-1	AMP	(1)
15	5	SW2-SW4	COMP. BCD ROTARY (STOCK #36022-1)	80-4530-59-1	AMP	(3)
18	3	SW5-SW9	ON-ON SPDT [3]	7101LIPYCBE	C&K	(5)
12	6	SW10, SW11	ON-ON-ON DPDT [3]	7111LIPYCBE	C&K	(2)
80						
12		SWITCH HOLE & MOUNT PRES				
4		FEED THRU				
244						

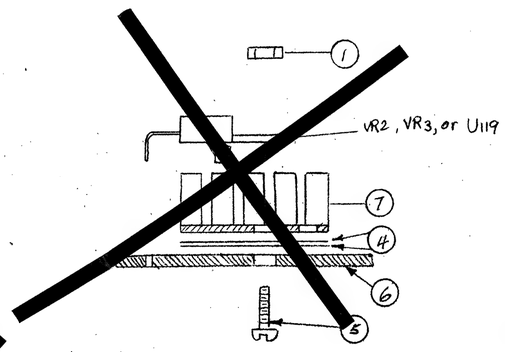
ID	DESC	VAL	MFG	CODE
1	PWB #10042 LATEST REV.		MARTEX	(1)
80 2	DISPLACEMENT CONNECTOR	3418-0000T	SCOTCH FLEX	(2) 40
3	RIBBON CABLE	76164-40	BERG	(1)
4	DISPLACEMENT CONNECTOR	3417-6000	SCOTCH FLEX	(2)
5	SPACER (part of SW5-SW11)			7
6	NUT (part of SW5-SW11)			7

GLEEMAN INSTRUMENT CO. 415-964-1464	
CONTROL BD - ASSY	
SCALE: 1:1	DWG: 10044C 1/1
BY: gf	DATE: 15 JUN 82

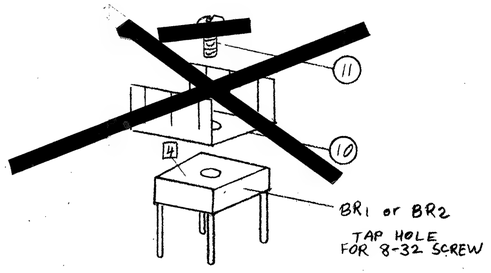




DETAIL 'A'
NO SCALE



DETAIL 'B'
No SCALE



DETAIL 'C'
No SCALE

NOTES:

1. SPACERS MUST BE CRIMPED BEFORE SOLDERING. ALL SPACERS TO BE INSTALLED ON THE FOIL (NON-COMPONENT) SIDE OF ITEM 6
2. ALL ICs AND MODULES ARE INSTALLED SO THAT PIN 1 IS IN THE UPPER-LEFT CORNER.
3. AFTER SOLDERING CLEAN ASSY WITH FREON FLUX REMOVER.
4. APPLY EVEN COATING OF THERMAL GREASE ON HEATSINK MATING SURFACE OF BR1, BR2, VR1, VR2, VR3, AND U106

GLEEMAN INSTRUMENTS 415-964-1464	
MAIN BOARD - ASSY	
SCALE 1:1	DWG 506686 1/2
BY ajf	DATE 2 NOV 82

U1 MM74C02N
U8 74LS373N

J2
+5V
SEQ RATE
R25 10K MIN
SEQ DELAY
R164 470 MIN
C7 10μF
NE556N U4
C83 .1
C115 .1
C114 .1
R44 10K
RESET
SLIDE SPEED
R26 10K
R45 10K
C116 .1
C117 .1
ADD JUMPER IF DRUM INTERFACE NOT INSTALLED
J1
OPTIONAL DRUM MACHINE INTERFACE
4.7K
JOYSTICK PITCH BEND
R27 10K
C118 .1
R142 18K
C132 .1
SINGLE POINT GND
+5
D2H
R210 100K
R211 470K
R209 10K
Q4
22μF CISS
C20 20pF
C21 20pF
6 MHz X1
D1
R46 47K
C9 1mF
U2 74C74
PULLUP
U1
U7 8085
RESET
TRAP
INTR
HOLD
RST5.5
RST6.5
RST7.5
READY
J9
U14-1 Sh. 2
JOY-STICK MOD CUTOFF Sh. 6
U8 74LS138
U9 74LS138
U10 74LS138
SWIN
SWINT2
ADC
RECYC
GCTS
GOTK
LS
TS
GS
U11 DM74LS00
CTR3
CTR2
CTR1
KS7
KS6
KS4
KS3
KS2
KS1
KS0
300X sh 2
sh 2
sh 2, 3
RESET sh 2
U22 2716
U23 TC5517APL
4K
2K
10K R206
U3 ADC0804LCN
R28 10K
C27 150pF
R142 18K
C131 .1
U6 74LS373
OE
Q2
R202 6.8K
OPTIONAL BATTERY BACKUP
D23 3.9V
D22
Q3
R203 2K
R204 470
R201 6.8K
Q1
B1 2.4V NiCd
R205 150
C154 .1

GLEEMAN INSTRUMENT CO.
415 964-1464

SCHEMATIC
PENTAPHONIC

SCALE: NONE	DWG 506606 1/6
BY: DH	DATE: 6 DEC 82

BLUE IN

G/GS — GRN — GND

OR — RED — OUT SENSE

010S

NC — USE WITH — OPTIONAL SWITCHING REG.

VR1 SR1605 — Blue, Os, Org, Rnd, G, Grn, Gs, Yel — 2200 µf 35WVDC — MM1475-D1

120 VAC IN — SW12 — T1 — FL1 1 AMP FAST-BLOW

P6, J6 — GRN-YL, GRN, RED, RED-YL, RED

BR1, BR2, NC

VR1 — C1 10000 µf 16WVDC — CASE — C4 10µf — C83-C95 .1×12 — 5v

VR2 — C2 2200µf 35WVDC — C96-C103 .1×8 — D16 IN4001 — D15 IN4001 — +15v

VR3 — C3 2200µf 35WVDC — C104-C131, C153 .1×11 — -15v

P6 — 1 Red; 2 (BLK/WHT optional); 3 Org; 4 Yel; 5 Grn; 6 Blue; 7 8 9

OPTIONAL REMOTE CONNECTOR

VA0 sh. 4 — R50 47K — R147 33K — SO0 sh. 5

VA1 sh. 4 — R51 47K — R149 33K — SO1 sh. 5

VA2 sh. 4 — R52 47K — R148 33K — SO2 sh. 5

VA3 sh. 4 — R53 47K — R151 33K — SO3 sh. 5

VA4 sh. 4 — R54 47K — R150 33K — SO4 sh. 5

R55 24K — U102 — R56 24K — U103 — C80 .01 — D19 — R57 24K — U103 — R58 24K — U104 — C81 .01 — D20 — R59 24K — U104

U83 LF13331 — U84 LF13331 — U85 LF13331

R74 1K — LS0 sh. 2 — C74 .01

R75 1K — LS1 — C75 .01

R76 1K — LS2 — C76 .01

R77 1K — LS3 — C77 .01

R78 1K — LS4 — C78 .01

C149 1000pf — R63 24K — U81 — R62 24K — U105

C151 1000pf — R61 24K — U81 — R60 24K — U105 — C82 .1 — D21

R145 33K — R146 33K

ZENER DIODES ARE IN5235A (6.8v)

SIGNAL DIODES ARE IN4148

J2 FINE TUNE 19 — R81 100K — U66 LM348 — R82 100K — U66 LM348 — R80 100K

R199 6.8K — R29 10K — R138 2K — C119 .1 — U82 — C135a 33pf NPO — C135b 47pf N1500 — OSC to Waveform Gen. ckt. sh. 3.

+5v — R69 10 — R71 1K

MOD DEPTH FOOTPEDAL — ON P33737 JACK BD. — P7 1 4 2 3 — J7 1 4 2 3

C124 .1

J4 — PITCH MOD 6 — MOD DEPTH 5 — MOD RATE 4 — LFO OUT 9

R117 120K — R200 1.8K — U69 — R98 100K — U69 LM348 — R72 1K — C133 .47µF — R49 47K — U101 — U69 — R47 47K — R198 18K

U101 — R48 47K — U69 — D17 — -15

C143 1000pf — R30 10K — R73 1K — U70 LM318 — R152 24K — C152 1000pF — R121 220K — R119 220K — R141 390K — R143 120K — D2

VCA MOD 7 — KBD GAIN 34 — SEQ GAIN 33 — 35 36 — 37 38 — 39 40 — +15 — -15

R65 47K — U80 LM348 — R146 33K

R142 10K — R2 20K — R101 100K — D14 — U80 — R9 20K — R24 75K — R144 20K — R67 3.3K

R66 47K — U80 LM348 — R145 33K

C150 1000pf — R64 24K — U81 LM348 — U102 — C84 .01 — D18 — R207 1K

R43 10K — U106 — R163 24K — C8 10µf — C130 .1 — R79 1K — R70 10

C8 10µf

R1 47 1W

J5 1 3 2 4 5 6 7 8 9 10 — P5 1 3 2 4 5 6 7 8 9 10

ON P33737 JACK BD.

TO AMP — TO PHONES — SPEAKER

U66 — C121 .1 — joystick sh. 4 — JOYSTICK sh. 1

J1 P1 — CUTOFF — MOD DEPTH — JOYSTICK

DWG 50660G 6/6

J IN: 8-bit resolution
JOUT: 7-bit resolution
CUT ON ALL '0's
41700 BOARDS

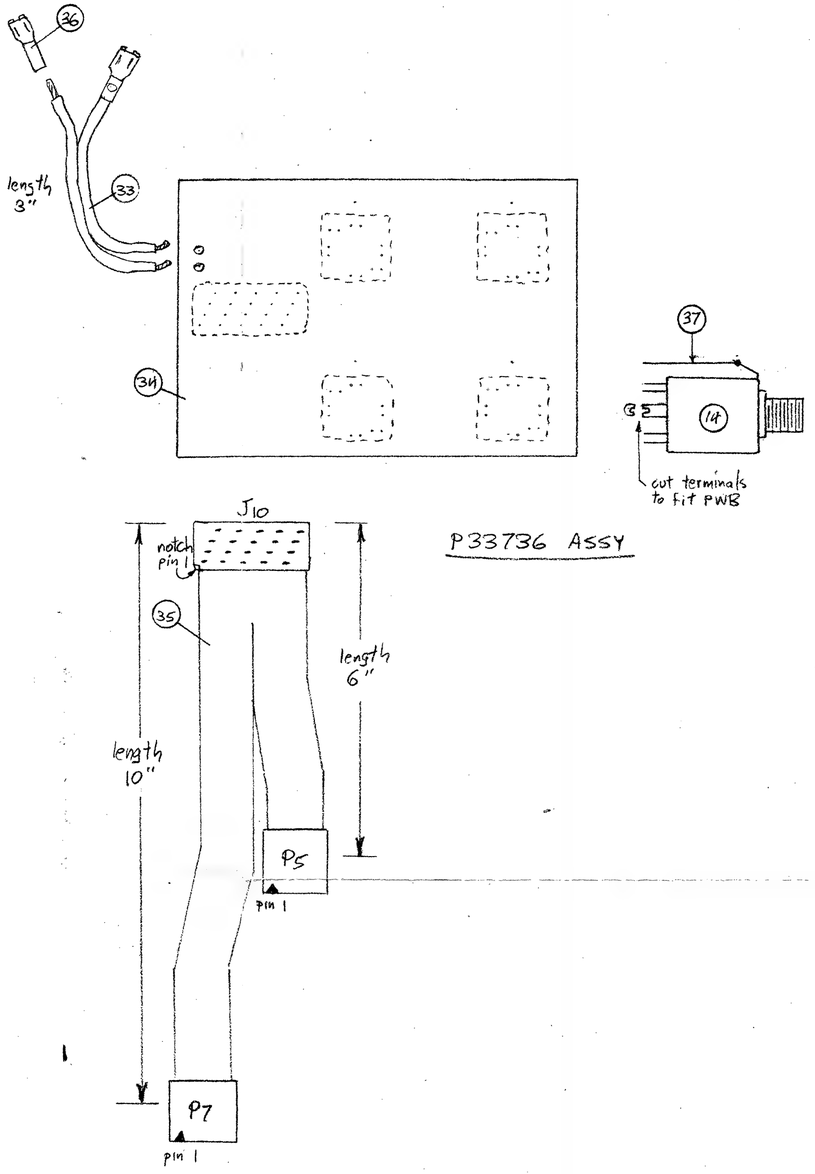
(RM1, RM2 15×10K)

GLEEMAN INSTRUMENT CO.
415-96H-146H

PRESETTER-SCHEM.

SCALE: NONE	DWG. 41690A 1/1
BY: dll	DATE: 15 JUN 82

ID	DESC	VAL	MFG	CODE
T1	POWER TRANSFORMER	F196-U	TRIAD	(1)
SW12 [1]	POWER SWITCH	10DS388	MOUSER	(1)
(1)	NUT (part of SW12)			(1)
(2)	WASHER (part of SW12)			(1)
(3)	GROMMET (part of SW12)			(1)
FH1 [1]	FUSEHOLDER	504-HKP	MOUSER	(1)
(4)	NUT (part of FH1)			(1)
				(1)
(6)	GROMMET, OPT. (part of FH1)			(1)
(7)	SCREW, FLTHD PHILLIPS	8-32 x 3/4		4
(8)	NUT	8-32		(4)
(9)	LOCKWASHER	8-32		(4)
(10)	STRAIN RELIEF	SR5L-1	HEYCO	(1)
(11)	LINE CORD	17205B-BLK	BELDEN	(1)
(12)	CRIMP TERMINAL	08-50-0106	MOLEX	(6)
(13)	CONNECTOR SHELL	09-50-7061	MOLEX	(1)
SPKR	SPEAKER 4x10"	H10GW	OAKTRON	(1)
(14)	PHONE JACK	16PJ083	MOUSER	4
(15)	WASHER (part of 14)			4
(16)	NUT (part of 14)			4
(17)	LOCKWASHER (part of R101-R122)			22
P1, P5, P7	CONNECTOR, DISPLACEMENT	65484-003	BERG	3
F1	FUSE, 1 AMP FAST BLOW	AGC1	BUSS	(1)
(18)	GRILL	GP410K	OAKTRON	(1)
(19) [1]	HEAT-SHRINK SLEEVE	3/32 DIA x 1/2		2
(21) [1]	HEAT-SHRINK SLEEVE	1/2 DIA x 2		(1)
(22)	CASE	P33740	W&M PLASTICS	(1)
(23)	JOYSTICK ASSY	900-032	KRAFT	(1)
(24)	JOYSTICK BEZEL	MAKE FROM 850-152	KRAFT	1
(25)	LED ASSY	559-0102-003	DIALIGHT	1
(26)	KNOB + CAP	2721753/3021113	POWER DYNAMICS	26
(27)	NUT (part of 10044)			26
(28)	NUT	7807	C&K	(7)
(29)	SCREW, PHILLIPS	2 x 1/2 PHILLIPS		(4)
(30)	SCREW, RNDHD PHILLIPS	8-32 x 3/4		8
(31)	MOUNTING PLATE	P33738	GLEEMAN	1
(32)	PEMNUT 8-32		PEM	8
J10	CONNECTOR, DISPLACEMENT	3422-	3M	1
(33)	SPEAKER CORD			AR
(34)	JACK PWB	P33737	LGM	1
(35)	20-COND RIBBON CABLE		BERG	AR
(36)	CRIMP TERMINAL			2
(37)	BARE WIRE #22			AR



P33736 ASSY

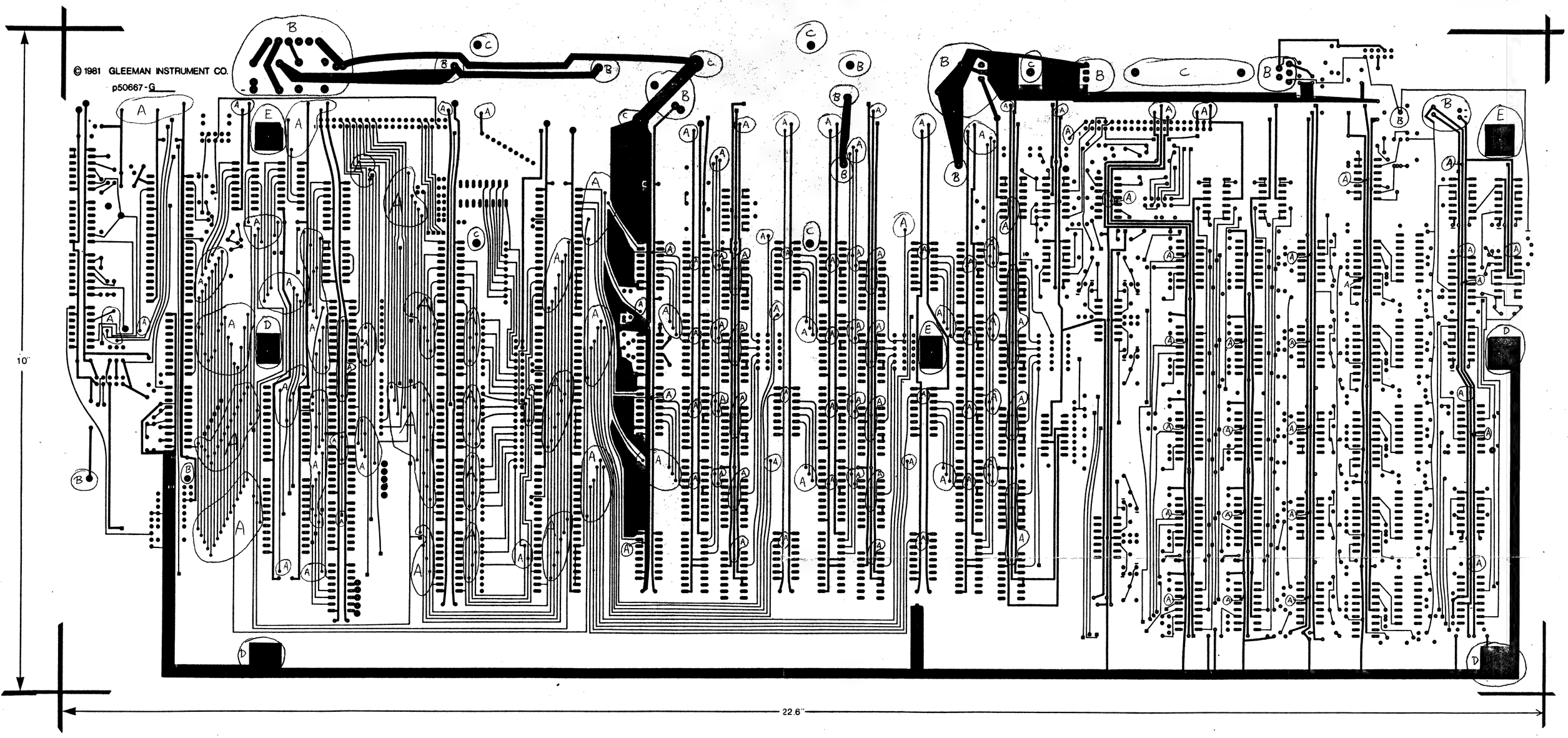
NOTES:

[1] SW12 CONNECTIONS TO BE INSULATED WITH ITEM 19. IN ADDITION ITEM 21 TO BE INSTALLED AROUND FH1.

DWG 33741B 3/3

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p50667-G



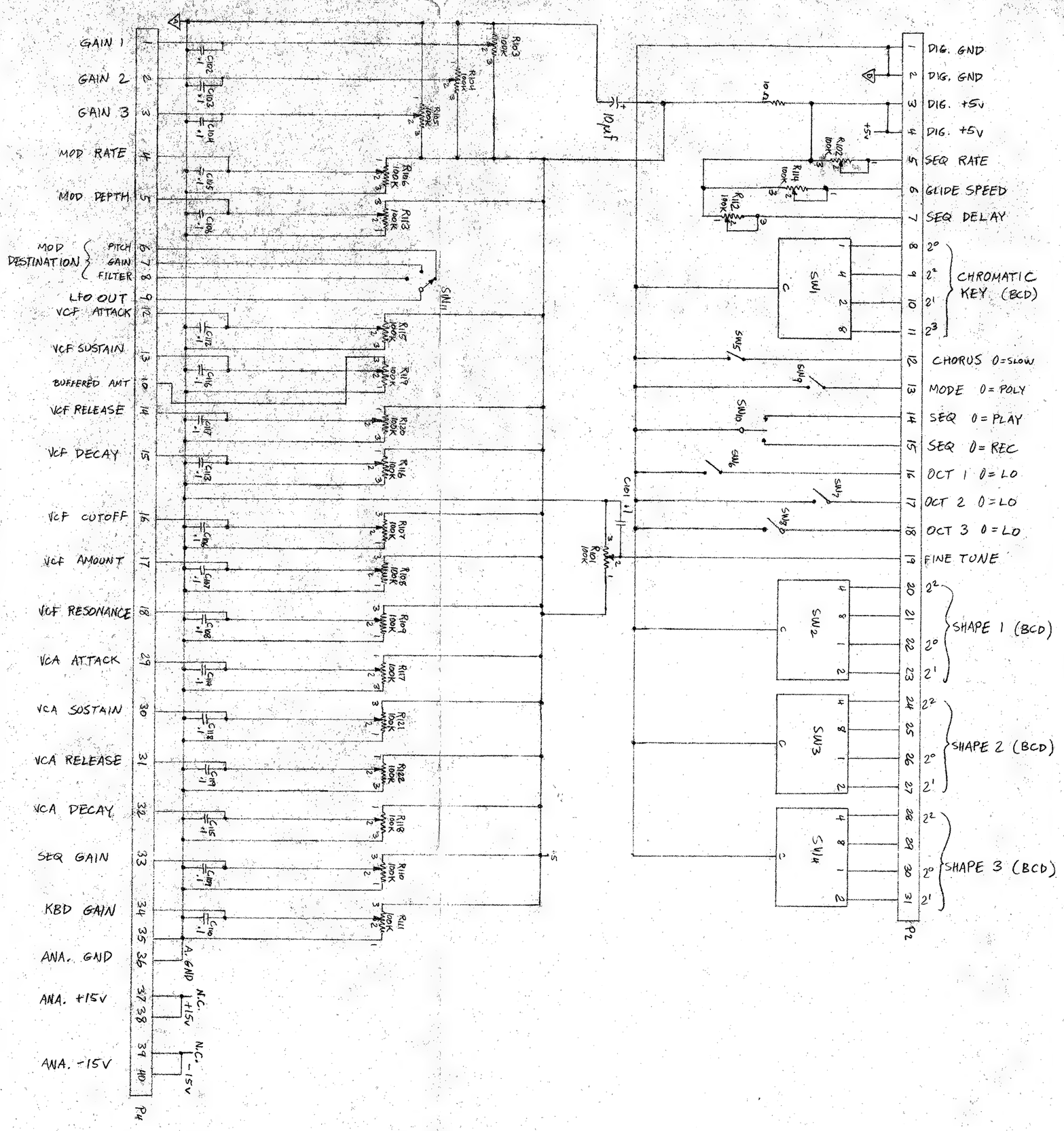
NOTES:

1. BOARD MAT'L IS .062 GLASS-EPOXY 1-OZ COPPER CLAD BOTH SIDES
2. PLATE-THRU HOLES ACCORDING TO BEST SHOP PRACTICE.
3. APPLY LEAD-TIN COATING APPROX. .001 THICK
4. SOLDER MASK PATTERN IS REVERSIBLE. APPLY SOLDER MASK TO BOTH SIDES.
5. SILK-SCREEN COMPONENT-ID PATTERN TO FRONT SIDE WITH WHITE INK.

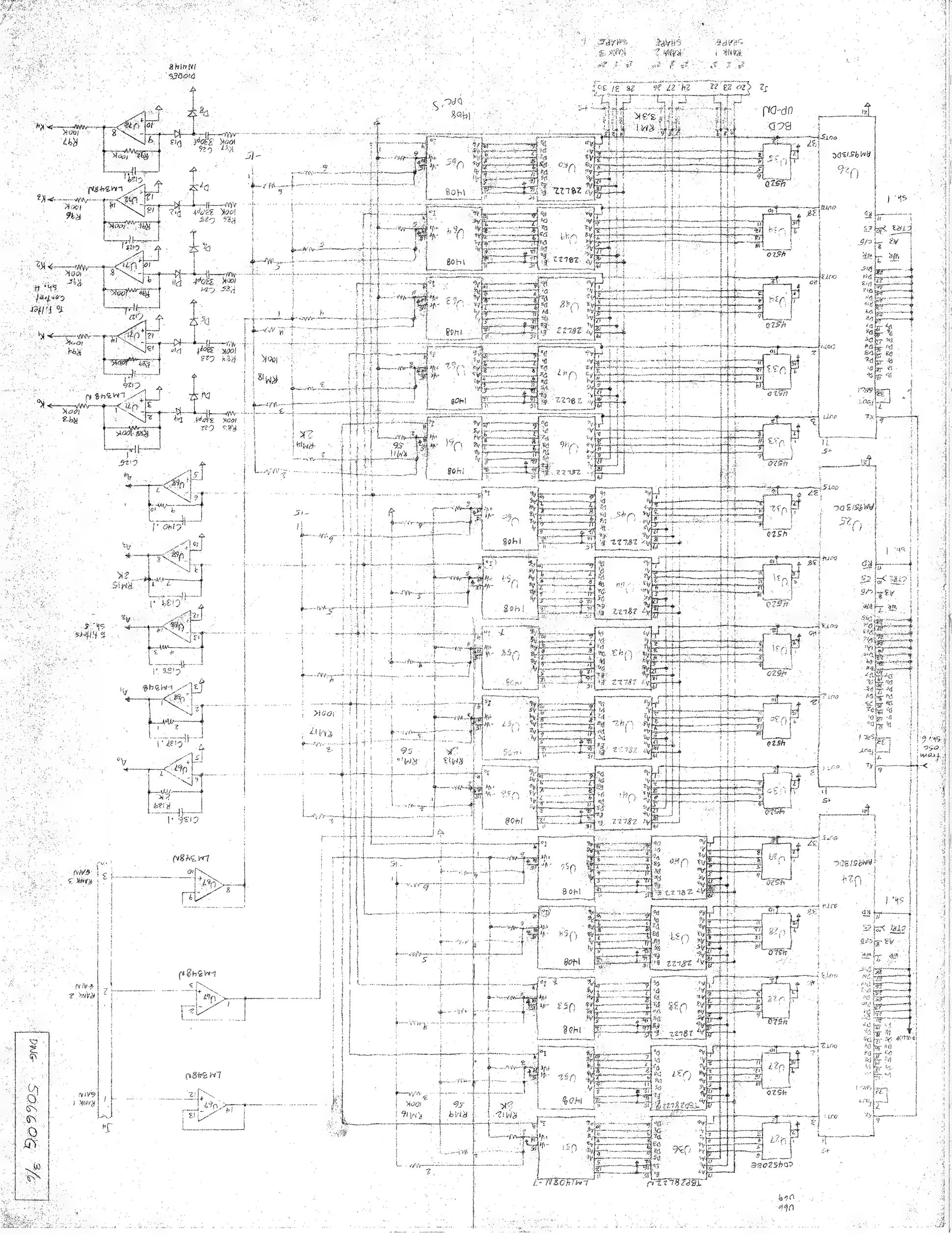
HOLE DRILLING TABLE		QUANTITY
NO CODE	.032	3228
A	.025	378
B	.050	49
C	.140 OR 9/64	9
D	.219 OR 7/32	4
E	.250 OR 1/4	3

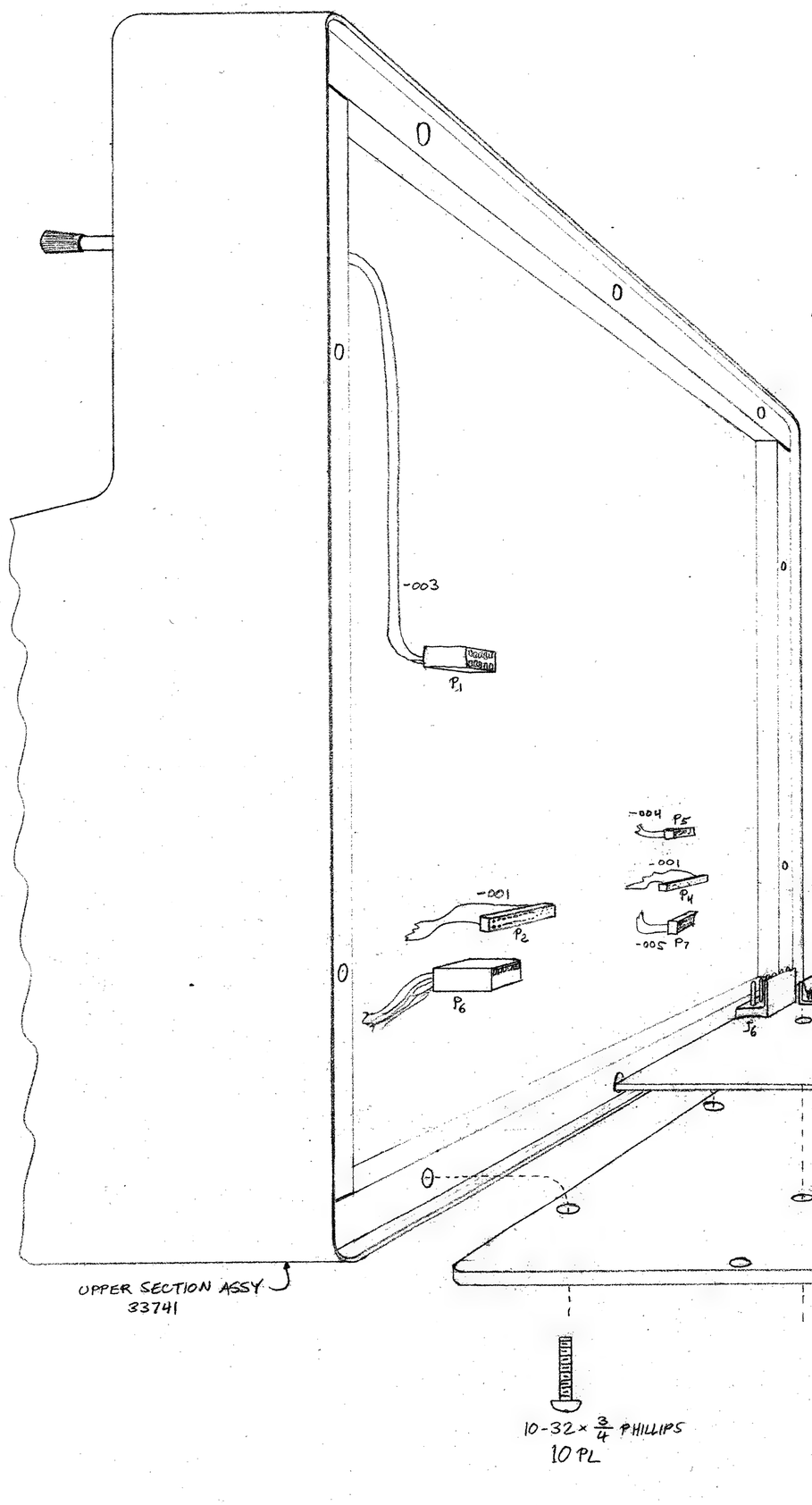
3671 TOTAL ±10

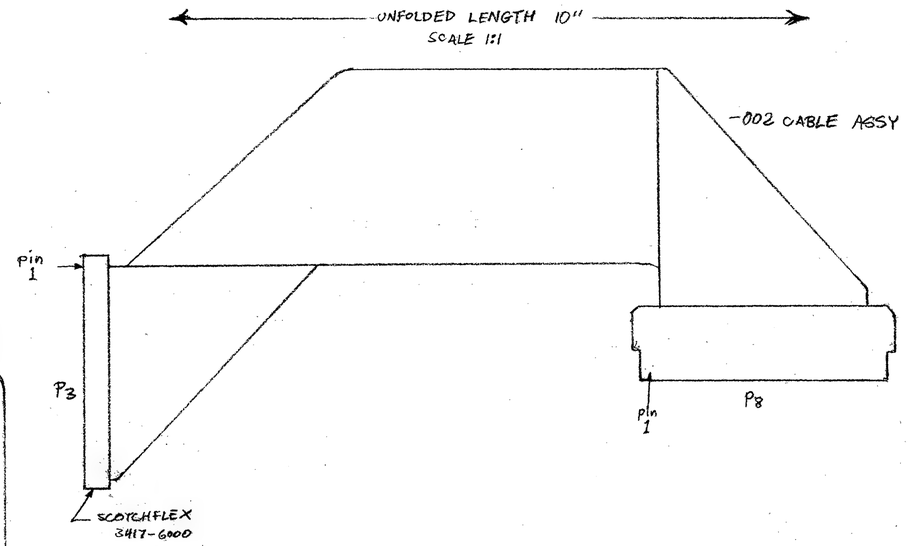
GLEEMAN INSTRUMENTS 1115-964-1464	
MAIN BD. - PWB	
SCALE 1:1	DWG 50667-G
BY AH	DATE 2 NOV 82

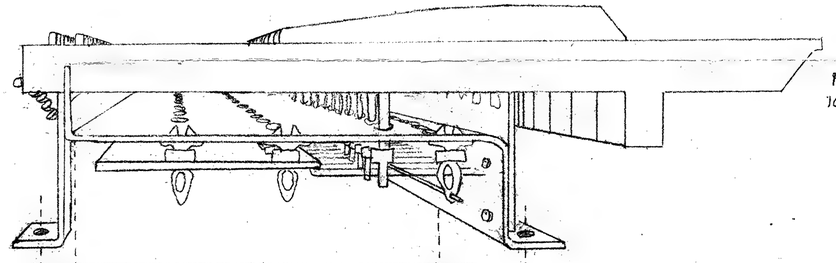


GLEEMAN INSTRUMENT CO. 415-964-1464	
CONTROL BD - SCHEMATIC FENTAPHONIC	
SCALE: NONE	DWG 1004HC Y1
BY GH	DATE 14 DEC 81


DWG 5066026 3/6
BCD UP-DN
RM1 3.3K
J2
DIODES IN4148
14p8 D/A's
RM18 100K
RM14 2K
RM11 56
RM10 56
RM9 56
RM8 56
RM7 56
RM6 56
RM5 56
RM4 56
RM3 56
RM2 2K
RM1 2K
RM17 100K
RM15 2K
RM16 3 100K
RANK 1 GAIN
RANK 2 GAIN
RANK 3 GAIN
J4
To filter Sh. 4
from osc Sh. 6
LM348N
LM348J
LM348W
LM348
AM9513DC
CD4520BE
TBP28L22 J
TBP28L22 N
28L22
14p8
U26
U25
U24
U23
U22
U21
U20
U19
U18
U17
U16
U15
U14
U13
U12
U11
U10
U9
U8
U7
U6
U5
U4
U3
U2
U1
Sh. 1
Sh. 5
Sh. 6







10-32 × 3/4 PHILLIPS
10 PL

FOOT
HH SMITH 2135
4 PL (FAR CORNERS)

8-32 × 3/4 PHILLIPS
7 PL

NOTES:

1. ASSEMBLY ORDER IS:
 1. MATE P3-J3.
 2. LOOSELY ASSEMBLE LOWER SECTION (KEYBOARD, MAIN ED ASSY, CASE BOTTOM) WITH 7 8-32 SCREWS.
 3. MATE P1-J1, P2-J2, P4-J4, P5-J5 P6-J6, P7-J7, P8-KEYBOARD.
 4. ASSEMBLE UPPER AND LOWER SECTIONS. USE CARE NOT TO DEMATE CONNECTORS.
 5. EQUALIZE SPACING ON EITHER SIDE OF KEYBOARD TO CASE.
 6. TIGHTEN 7 8-32 SCREWS.

GLEEMAN INSTRUMENT CO 415-964-1464	
LOWER SECTION- ASSY FINAL ASSY	
SCALE : NONE	DWG 33750B V1
BY aH	DATE 14 DEC 81

GLEEMAN INSTRUMENT COMPANY
97 ELDORA DRIVE • MOUNTAIN VIEW, CALIFORNIA 94041

PHONE: 415 - 964 - 1464

SERVICE BULLETIN

INSTALLATION OF DRUM MACHINE INTERFACE
S/N 8110036 and above

PREPARE WORKSPACE

You will need at least a 24" X 30" area on your workbench or tabletop. Spread a clean terrycloth towel over the surface to protect the Pentaphonic case.

REQUIRED TOOLS

Large Phillips screwdriver
Pliers
Wire Stripper
Soldering Iron and rosin-core solder
Electric Drill and 3/8" bit

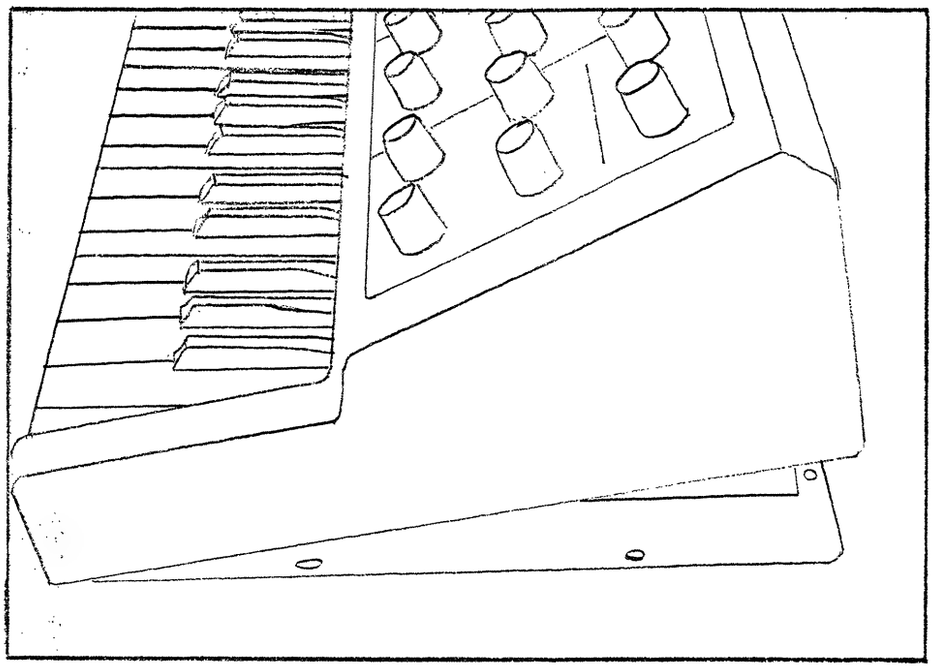
UNPLUG THE PENTAPHONIC

Although there are no exposed high-voltage conductors in the Pentaphonic, it never hurts to play it safe. Installation of the Drum Machine Interface requires the Upper Assembly to rock back against the back surface. This often causes the actuation of the Power Switch. Unpremeditated application of power during the installation of electronic circuitry is never desirable and easily prevented.

OPEN UNIT

Using a large Phillips screwdriver remove ten 10-32 X 3/4 Phillips screws from around the perimeter of the Unit. Do not remove the seven 8-32 screws which are also on the bottom but located well inside the perimeter.

(Cont.)



Remove perimeter screws, raise back, slide forward

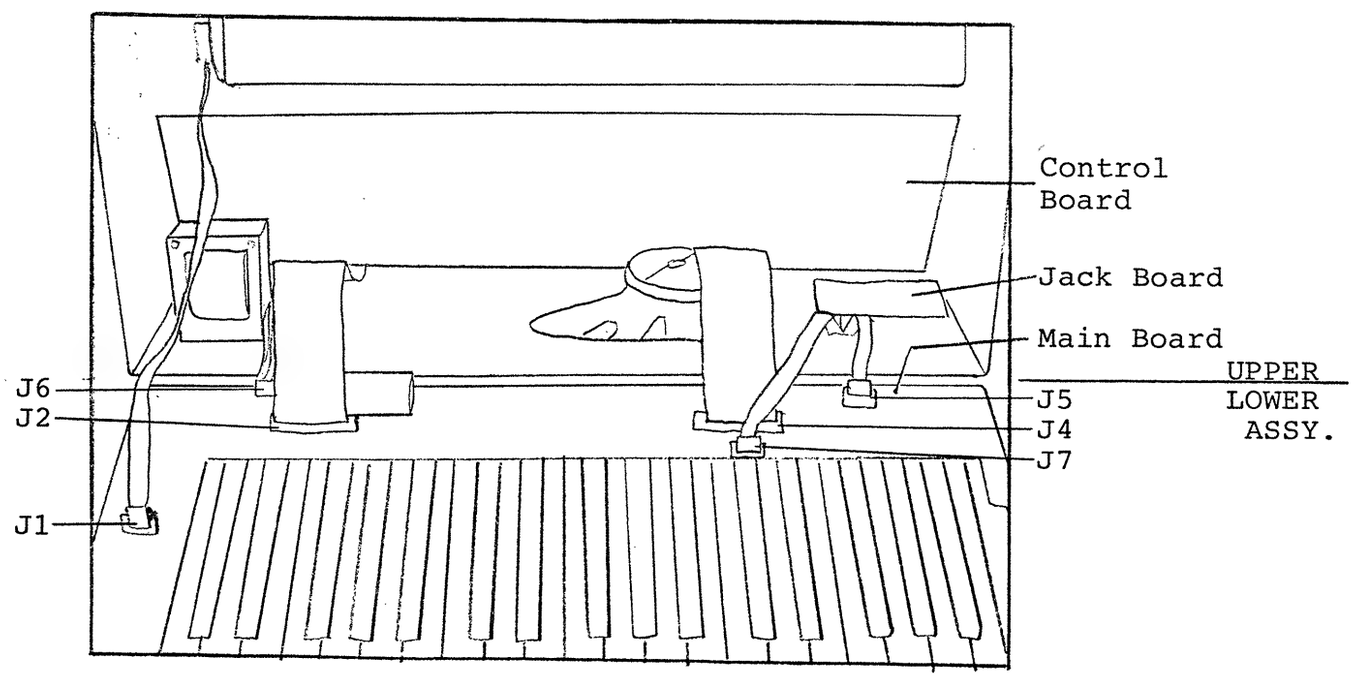


FIGURE 1

GLEEMAN INSTRUMENT COMPANY
97 ELDORA DRIVE • MOUNTAIN VIEW, CALIFORNIA 94041

PHONE: 415 - 964 - 1464

SERVICE BULLETIN

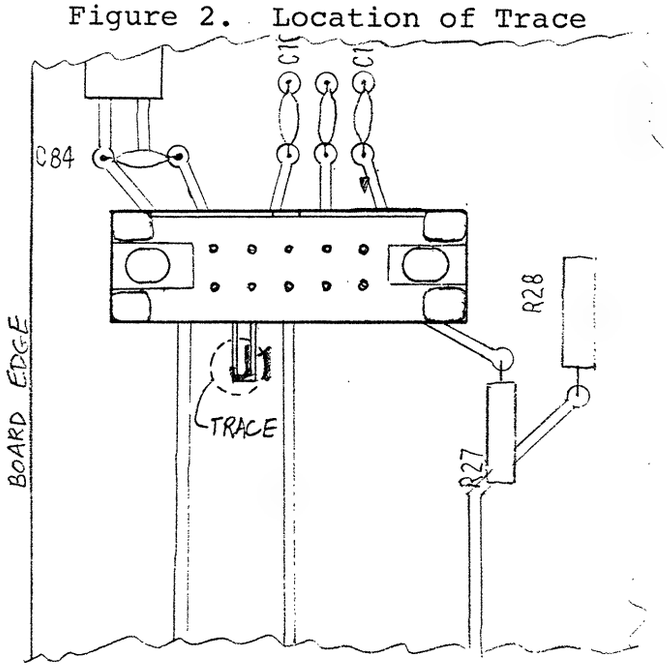
OPEN UNIT (Cont.) Figure 1

When all ten screws have been removed hold the top and bottom together to prevent their uncontrolled separation. Place the Unit in the middle of the workspace in a normal playing position. Raise the back of the case a few inches, then slide it forward until the forward edge clears the keyboard. Raise the forward edge and lower the back until the Upper Assembly rests on its back.

CUT TRACE Figure 2

Locate the U-shaped trace near J1. The designation "J1" is actually screen-printed over this trace. Using an X-ACTO knife or other sharp implement make an opening in this trace at least as wide as the trace itself. This will force routing of the sequencer clock to the Drum Machine Interface jack to be installed next.

Figure 2. Location of Trace



GLEEMAN INSTRUMENT COMPANY
97 ELDORA DRIVE • MOUNTAIN VIEW, CALIFORNIA 94041

PHONE: 415 - 964 - 1464

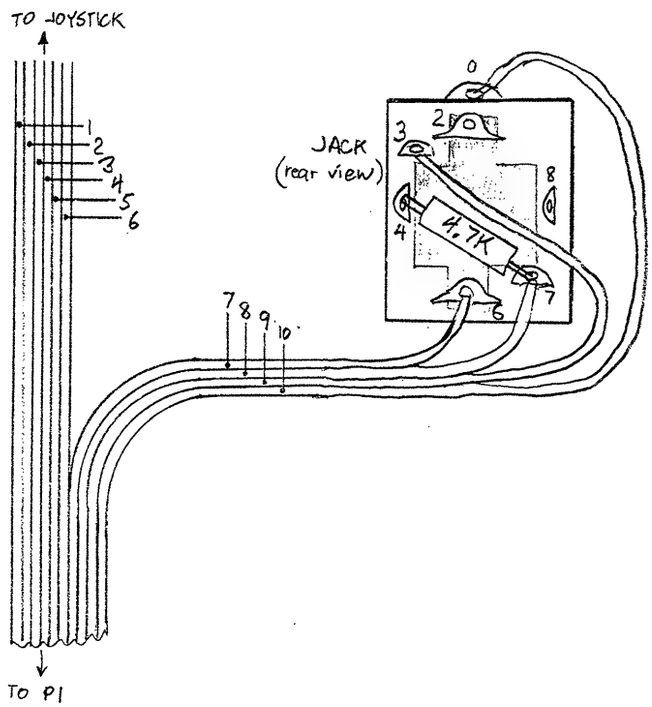
SERVICE BULLETIN

CONNECT JACK

First locate the four unused wires in the Joystick ribbon cable. These may be hidden or held by the cable strain relief near the Joystick. The wires in this cable are numbered from 1 to 10 starting with the Joystick wires, so the unused wires are 7, 8, 9, and 10. Separate four unused wires from the six Joystick wires by tearing the cable between wires 6 and 7 down about halfway along the cable.

Now strip about 1/8" of insulation from the ends of the wires and solder them to the Drum Machine Interface jack according to Figure 3. As you solder pin 7 of the jack make sure the 4.7K resistor is soldered also. When done, double-check your work. Make sure that wire 7 goes to Pin 6, wire 8 goes to Pin 7, wire 9 goes to Pin 3, and wire 10 goes to Pin 0 (jack bushing).

Figure 3. Jack Connections



GLEEMAN INSTRUMENT COMPANY
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SERVICE BULLETIN

DRILL MOUNTING HOLE

Drill a 3/8" hole in the left side of the case in a location which can be easily reached by the Drum Machine Interface jack. After drilling remove any plastic chips which may have fallen into the Unit.

MOUNT JACK

Mount the Drum Machine Interface jack in the 3/8" hole using a lockwasher behind the case and a smooth washer in front.

CLOSE UNIT

Installation of the Drum Machine Interface is now complete. Close the Upper Assembly down over the Lower Assembly. As you do so, make sure the various ribbon cables do not interfere with the keyboard and are not caught between the case top and bottom. The case top will have to be positioned slightly forward in order to slip the forward edge under the keyboard. Then the case top can be lowered all the way until it seats against the bottom. Fasten the top and bottom together with the ten 10-32 X 3/4 screws removed earlier, tightening firmly but not so tight that the screw heads distort the plastic.

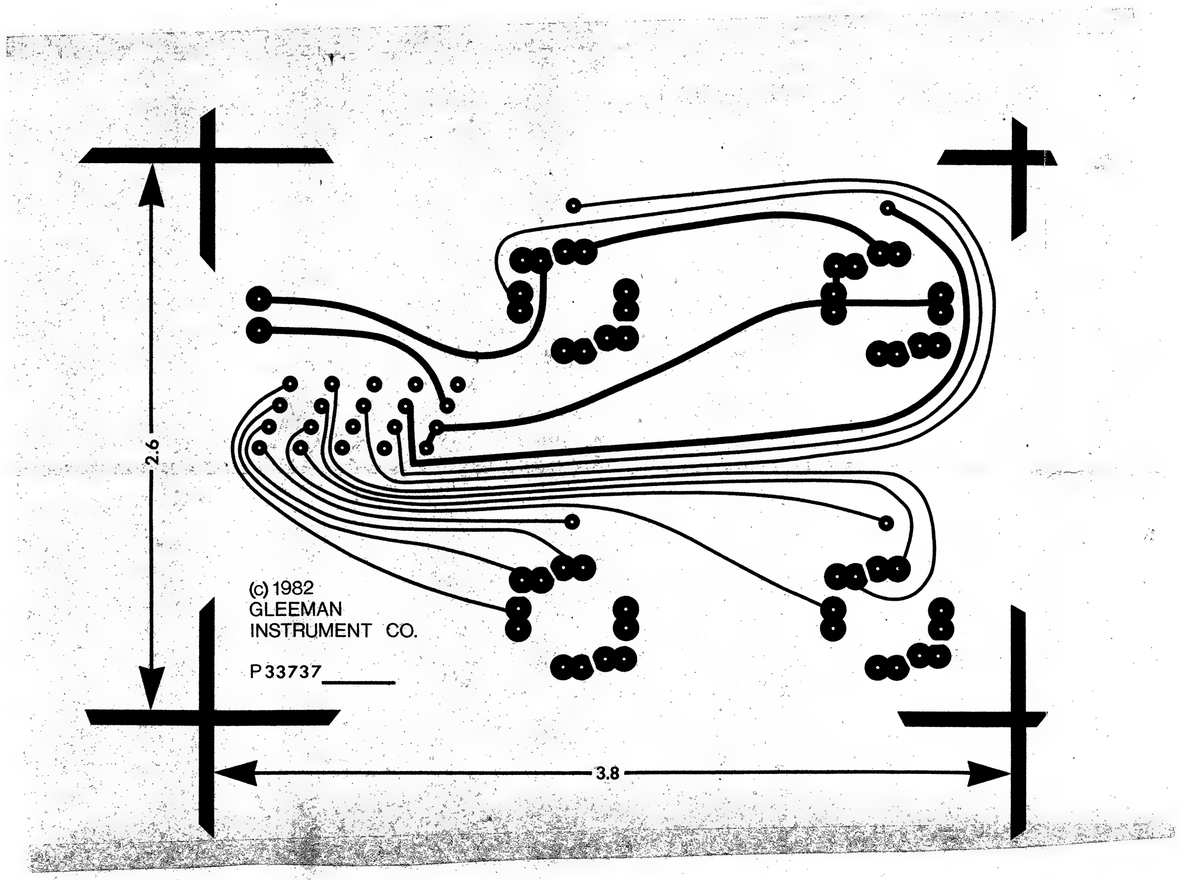
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OPERATION OF THE DRUM MACHINE INTERFACE

The Drum Machine Interface is used to synchronize the Pentaphonic built-in sequencer to an external drum machine. Any drum machine capable of putting out a positive 5-volt pulse on the downbeat will work. Machines having an "SQ" or similar output will have to be programmed to produce a downbeat pulse.

Program the drum machine first, then listen to its rhythm pattern as you program the Pentaphonic sequencer. Switch the sequencer to PROGRAM and begin the sequence on the downbeat. When finished switch the sequencer to PLAY. The sequence will play once then wait for the downbeat pulse to play again. The DELAY control can often be used to hold off recycling the sequence until a second downbeat occurs, but normally is set to MIN. Note that since resynchronizing occurs only at the beginning of the sequence, short sequences are better than long ones. The inevitable drift between the drum machine clock and the sequencer clock will cause long sequences to get slightly out of sync by the end of the sequence.



NOTES:

1. BOARD MAT'L IS .062 GLASS-EPOXY OR PHENOLIC, COPPER-CLAD 1 SIDE.
2. APPLY LEAD-TIN COATING APPROX .001 THK.
3. APPLY SOLDER MASK TO FOIL SIDE.

HOLE DRILLING TABLE		
CODE	SIZE	COUNT
ALL	.040 ±.004	74

GLEEMAN INSTRUMENT CO. 415-964-1464	
JACK-PWB	
SCALE 2:1	DWG 33737
BY dlf	DATE 14 APR 82

U80 LM348

AMP

FILTER

J4	A	D	S	R	R	S	D	A	BUFFERED AMT	VCF AMT	VCF CUTOFF	FILTER MOD
	29	32	30	31	14	13	15	12	10	17	16	8

U72 U73 U74 U75 LM348 — R31 10K, R32 10K, R33 10K, R34 10K — R165 470, R166 470, R167 470, R168 470, R169 470, R170 470

U76 LM348 — R99 100K, R68 56K, D3, C122 .1, joystick sh. 6

U70 LM348 — R100 100K, C142 1000pf

R118 220K, R119 390K, R120 220K, C123 .1

J7 P7 — VCF CUTOFF FOOTPEDAL — DN P33737 JACK BD.

U78 LM348 — C144 1000pf, R102 100K, R183 39K, R37 10K, R171 470 — K0 — FC0

U79 LM348 — C145 1000pf, R103 100K, R184 39K, R38 10K, R172 470 — K1 — FC1

U77 LM348 — C146 1000pf, R104 100K, R185 39K, R39 10K, R173 470 — K2 — FC2

U71 LM348 — C147 1000pf, R105 100K, R186 39K, R40 10K, R174 470 — K3 — FC3

U69 LM348 — C148 1000pf, R106 100K, R187 39K, R41 10K, R175 470 — K4 — FC4

From waveform generators Sh. 3

To filters sh. 5

Filter control

U86 CEM3310 1435A 8130 — C59 .01, R4 750, C48 .047, C58 .022, R153 24K — G0, T0 — VA0

U87 CEM3310 — C60 .01, R5 750, C49 .047, C65 .022, R154 24K — G1, T1 — VA1

U88 CEM3310 — C61 .01, R6 750, C50 .047, C66 .022, R155 24K — G2, T2 — VA2

U89 CEM3310 — C62 .01, R7 750, C51 .047, C67 .022, R156 24K — G3, T3 — VA3

U90 CEM3310 — C63 .01, R8 750, C52 .047, C68 .022, R157 24K — G4, T4 — VA4

R176 27K, R177 27K, R178 27K, R179 27K, R180 27K, R181 27K — −15

U91 CEM3310 — R9 750, C53 .047, C59 .01, R158 24K — R107 100K, R112 100K

U92 CEM3310 — R10 750, C54 .047, C60 .01, R159 24K — R108 100K, R113 100K

U93 CEM3310 — R11 750, C55 .047, C71 .01, R160 24K — R109 100K, R114 100K

U94 CEM3310 — R12 750, C56 .047, C72 .01, R161 24K — R110 100K, R115 100K

U95 CEM3310 — R13 750, C57 .047, C73 .01, R162 24K — R111 100K, R116 100K

DWG 50660G 4/6

NOTE IN

NOTE -ID

P7

J3

RM4 3.3K

RM5 3.3K

RM6 3.3K

RM7 3.3K

RM8 3.3K

J8

KS0 KS1 KS2 KS3 KS4

sh.1

300X

+5

NC

NC NC NC

PULLUP

U17 DM81LS95AN

U18 DM81LS95AN

U19 DM81LS95AN

U20 DM81LS95N

U21 DM81LS95N

RD

D7 D6 D5 D4 D3 D2 D1 D0

A2 A1 A0

reset

U16 DM81LS95AN

U15 DM81LS95AN

U12 MC14099B

U13 MC14099B

U14 MC14099B

GS

WR DIS

TS

LS

SWIN

SWIN2

RM3 3.3K

RM2 3.3K

G0 G1 G2 G3 G4

sh. 4

T0 T1 T2 T3 T4

sh. 4

LS0 LS1 LS2 LS3 LS4

sh. 6

J9-1

sh. 1

J2

RANK 1 OCT/OCTAVE

RANK 2 OCT/OSC 2 TUNE

MONO/POLY

RANK 3 OCT/OSC 3 TUNE

SER REPEAT

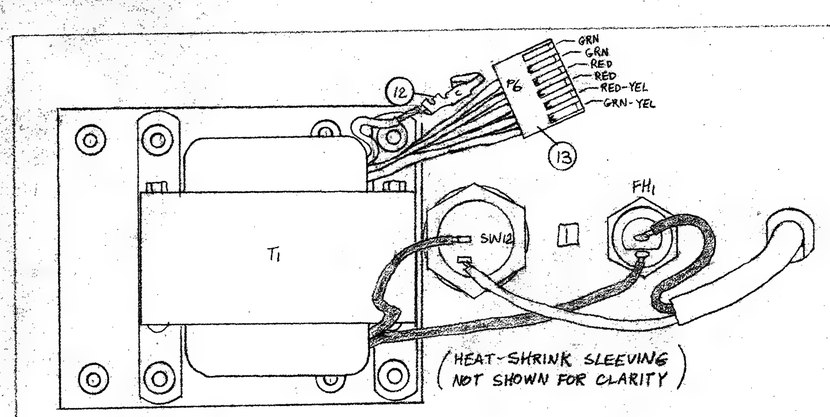
KBD KEY

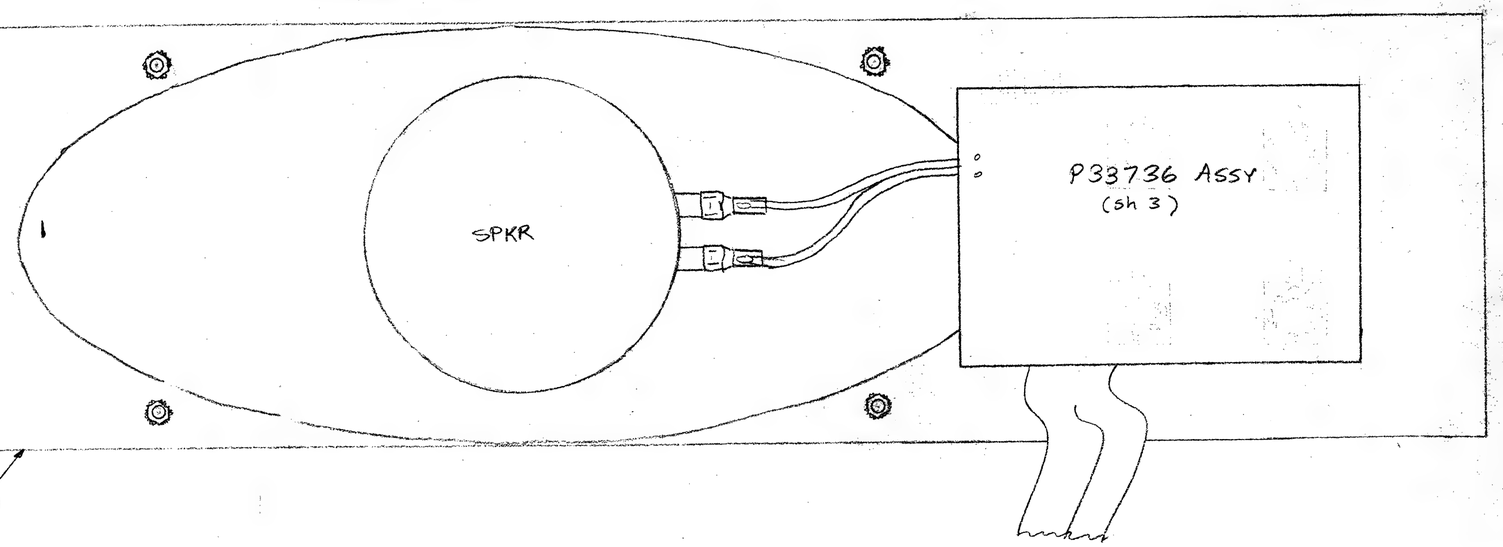
CHORUS

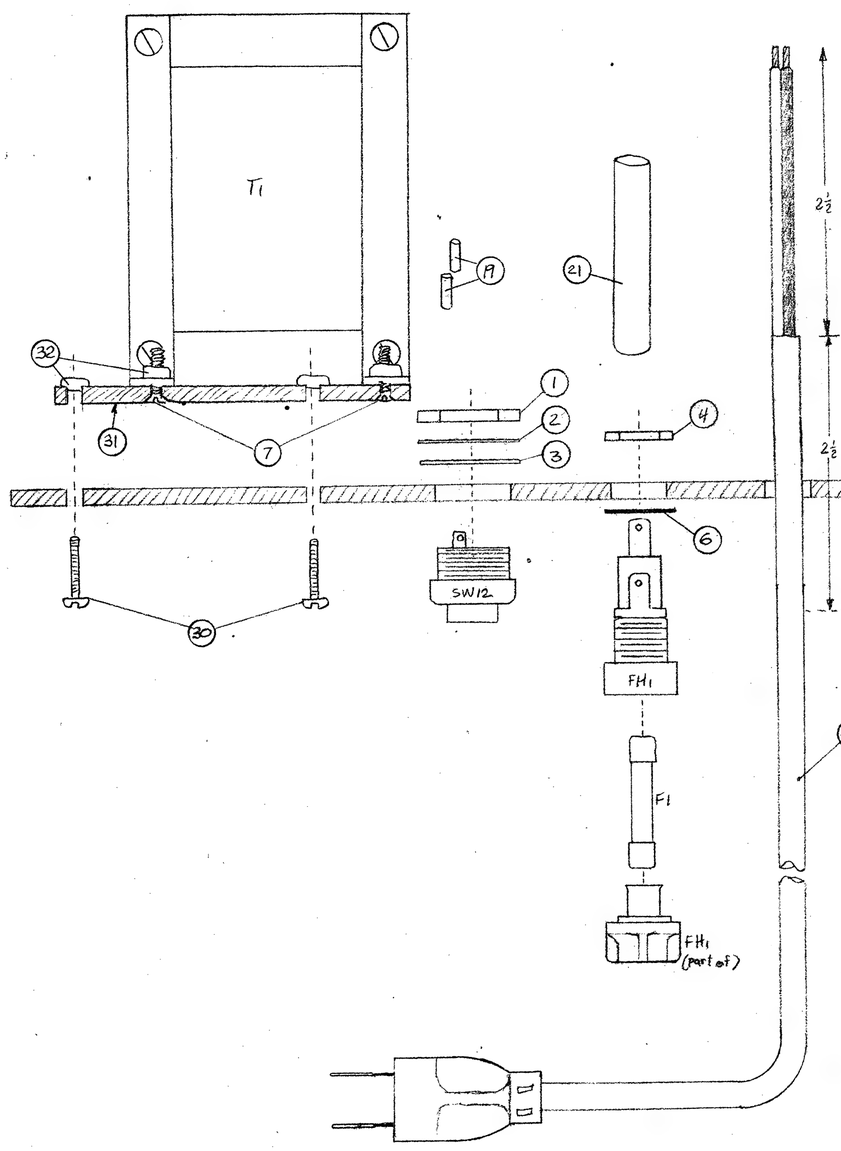
PITCHBEND RANGE

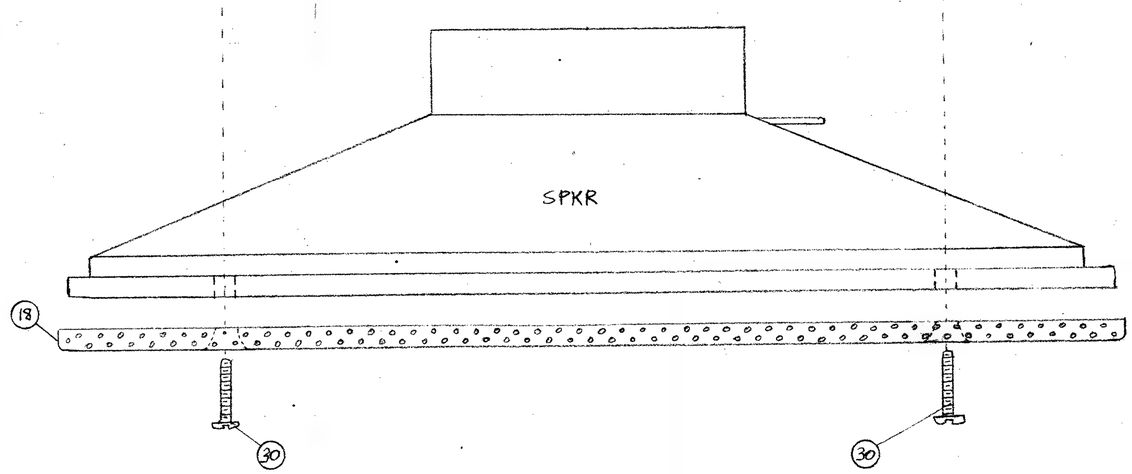
SER TRANSPOSE

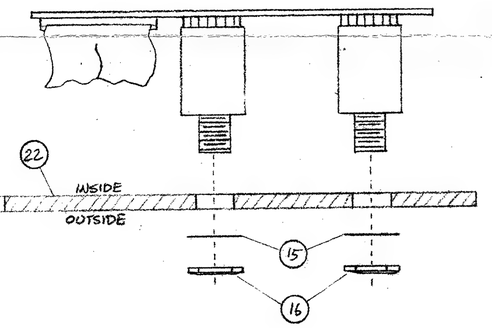
DWG: 506606 2/6











GLEEMAN INSTRUMENT CO
415-964-1464

UPPER SECTION - ASSY

SCALE 1:1	DWG: 33741B 1/3
BY ajf	DATE 14 JUN 82

TK

From: David Kean <keand@cadvision.com>
To: TK <terryk@foothill.net>
Sent: Friday, January 05, 2001 6:00 AM
Subject: Fw: Gleeman junk.

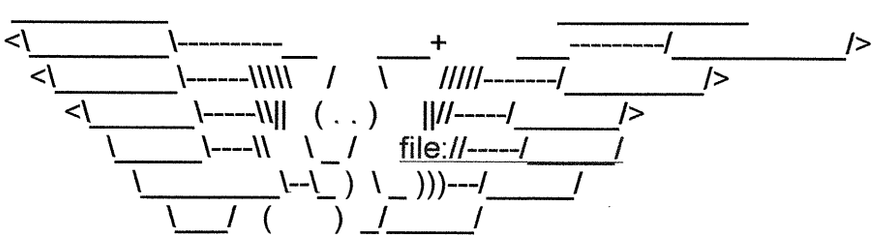
HI,

Hate to bother you yet again, but these guys are driving me nuts. Any chance of that stuff shipping anytime soon?
Just throw it all in a box, call Airborn for a pickup and send it collect. I get things from the states often through these guys and they have it pretty well together. They are at: 800-247-2676

Thanks,

d.
-----Original Message-----
From: arc angel <arc-angel@arc-angel.demon.co.uk>
To: mellod@netwood.net <mellod@netwood.net>
Date: Tuesday, December 12, 2000 5:07 AM

>Dear David,
>
>
>Any advances with the Gleeman schematics...? I am having real problems with
>my Gleeman pentaphonic clear...and would love to be able to fix it !!!
>
>hope we can sort something out...I have no problem paying for any
>information you provide hope to hear from you,
>
>
>James
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GLEEMAN INSTRUMENT COMPANY
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PHONE: 415 - 964 - 1464

Dear Dealer:

Thanks for your interest in the Pentaphonic. We look forward to working with you in developing your sales of this exciting new product.

The Pentaphonic is a milestone in synthesizer design. It allows keyboardists of varied backgrounds to achieve fully professional sound quality with a minimum of effort and experience. Features such as polyphonic duet sequencing, built-in speaker, and fat 3-oscillator sound make the Pentaphonic the hottest little synth to come along in years.

As a dealer you will apreciate the dependable, calibration-free ruggedness of every unit. If you like selling keyboards instead of fixing them, you'll enjoy the sales advantages of the Pentaphonic. They're easy to demonstrate too, because the oscillators are permanently tuned to produce rich chorusing effects. The Pentaphonic needs no special technical skills or accessories; it plays right out of the box.

To introduce your firm and your patrons to the new Pentaphonic, we will process your purchase order for one or more units at the wholesale price of $1677. (Suggested list price is $2795). We will notify you before we ship to arrange for payment. Currently our backlog is 90 days, so get your order in soon to hold your place in line.

We feel that the Pentaphonic will soon be your best-selling keyboard in its price range. Hope to hear from you soon.

Sincerely,

Robert J. Gleeman

Robert J. Gleeman
Vice-President, Sales

Soon to come:

A retrofittable presetter module
for the Pentaphonic which will add
the convenience of 12 user-programmed
sound patches.

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SERVICE BULLETIN

LOAD FACTORY PRESETS INTO NON-VOLATILE MEMORY (FIGURE 5)

Occasionally it will be necessary to load the factory presets into non-volatile memory, usually after initial installation of the Presetter Module or replacement of the Lithium battery. This is done with the internal switches which are accessible through the heat-vent slot, second from the left as you view it from a normal playing position. Follow these steps in the order given:

1. Set the RECALL switch to latched RECALL.
2. Set internal switch #2 to the left ("factory" position).
3. Press the STORE pushbutton and hold.
4. Turn on the AC power switch. If the power is already on, momentarily actuate internal switch #3 by moving it to the left, then releasing.
5. Release the STORE pushbutton.
6. Set internal switch #2 to the right ("normal" position).

Verify the presence of presets in locations 00 through 99.

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VERIFY OPERATION

Position the RECALL switch to its middle (straight-up) position. Plug in the AC line cord and turn on the AC power switch. Verify that all front-panel control knobs and switches perform their function. Failure of any or all knobs to function properly could mean a mal-functioning Presetter Module.

Now set the leverswitch to '50' and set the RECALL switch to latched RECALL. The "Typical Piano" preset should be obtained. If it is not, it may mean that the Factory Presets are not loaded into non-volatile memory. See "Load Factory Presets into Non-volatile Memory". Verify the presence of presets in positions 00 through 99. Verify that you can store patches using the STORE pushbutton.

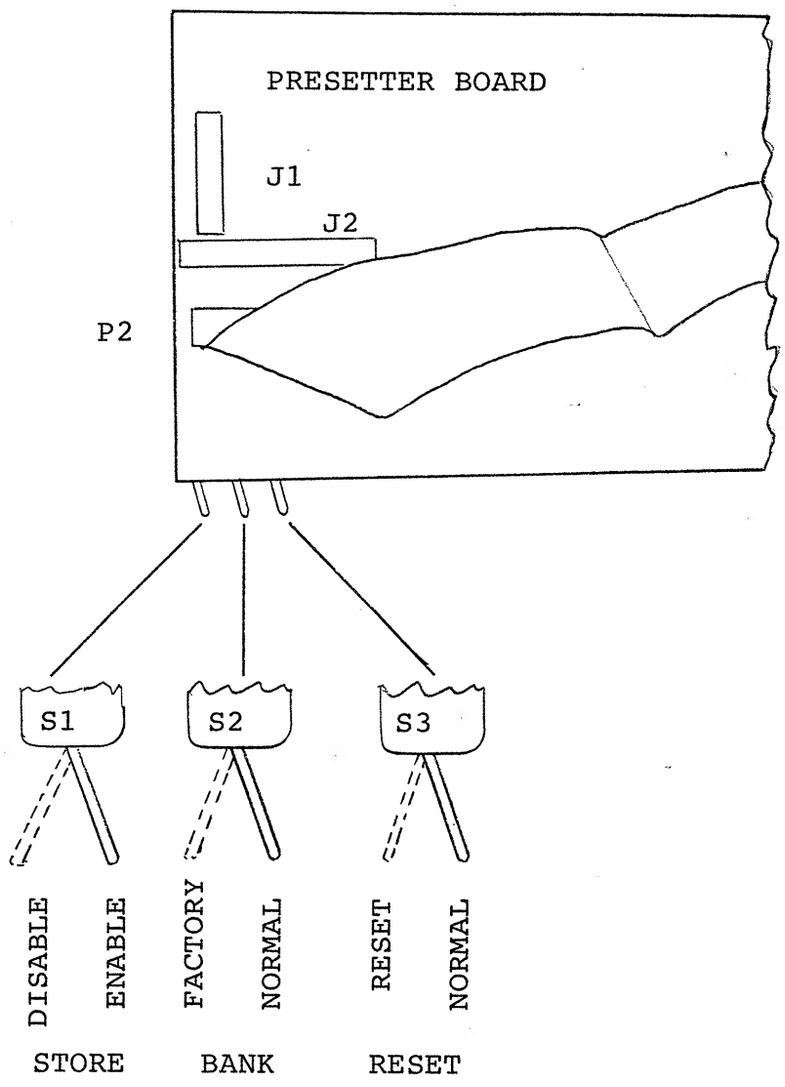

PRESETTER BOARD
J1
J2
P2
S1
S2
S3
DISABLE
ENABLE
FACTORY
NORMAL
RESET
NORMAL
STORE
BANK
RESET

FIGURE 5